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AZ CORP COMMISSION  
DOCKET CONTROL


September 26, 2014

ORIGINAL

Arizona Corporation Commission  
DOCKETED

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Docket Control  
Arizona Corporation Commission  
1200 W. Washington  
Phoenix, AZ 85007

DOCKETED BY 

RE: Arizona Public Service Company TS-5 to Palo Verde Line Siting  
Docket No. L-00000D-05-0128-00000

Pursuant to Decision No. 68063, Condition 15, dated August 17, 2005, Arizona Public Service Company ("APS") was ordered as follows:

Before construction on this Project may commence, the Applicant must file a Plan of Development approved by the Bureau of Land Management ("BLM") with ACC Docket Control with copies to affected areas of jurisdiction. Applicant will comply with the BLM's Standard Construction and Operating Procedures and Mitigation Measures (Attachment B).

Attached please find the APS Plan of Development for the TS-5 to Palo Verde Line Siting matter. If you have any questions regarding this information, please contact Gregory Bernosky at (602)250-4849.

Sincerely,



Lisa Malagon

LM/sb  
Attachment

cc: Brian Bozzo

**PLAN OF DEVELOPMENT  
FOR THE  
PALO VERDE TO SUN VALLEY (TS5)  
PROPOSED 500kV TRANSMISSION LINE PROJECT**

Submitted to:

**Bureau of Land Management  
Phoenix Field Office**

**BLM Case File No. AZA-32639**

Submitted by:

**Arizona Public Service Company**

**September 2013**



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## SECTION 1 – INTRODUCTION

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Section 1 of the Plan of Development (POD) provides an overview of the Palo Verde Hub to Sun Valley Substation 500-kilovolt (kV) Transmission Project (project), which includes the construction of the Delany 500kV Switchyard. It explains the purpose of the POD, including its relationship to other documents prepared for the project, as well as other relevant permits and approvals.

### 1.1 PROJECT BACKGROUND

Arizona Public Service Company (APS), the Proponent, has applied for a right-of-way grant (Case File Number AZA-32639) from the Bureau of Land Management (BLM) for the construction, operation, and maintenance of the proposed 500kV transmission project. The Sun Valley (formerly TS-5) Substation would be a 500/230kV facility located south of the Hassayampa Pumping Plant along the Central Arizona Project (CAP) Canal. The proposed route parallels a portion of the existing Palo Verde–Devers No. 1 500kV Transmission Line (AZA-23805) and the Harquahala–Hassayampa 500kV Transmission Line (AZA-31068), as well as the CAP Canal (AZA-22075). The transmission line would cross BLM land, Bureau of Reclamation (BOR) land, and Arizona State Trust or private lands.

The BLM and APS jointly developed guidelines for the siting, design, construction, restoration, reclamation, and maintenance of the proposed project. These guidelines are included in this POD. The design, construction, operation, and maintenance of the proposed project will meet or exceed the requirements of the National Electrical Safety Code (NESC) and U.S. Department of Labor Occupational Safety and Health Administration, as well as APS' requirements for safety and protection of landowners and their property.

The BLM would issue to APS a right-of-way grant to construct, operate, and maintain a 500kV transmission line that would originate at Bay 10 in the southern switchyard of the Palo Verde Nuclear Generating Station (PVNGS), and would terminate at the Sun Valley Substation. Figure 1-1 presents an overview of the proposed transmission route and substation. A right-of-way of up to 200 feet in width and a lease-term of 30 years will be required to construct, operate, and maintain the transmission line and structures. The estimated length of the proposed transmission line is approximately 43 miles, roughly 26 miles of which would cross BLM land within the required right-of-way.

The 500kV transmission line would be designed for one 3-phase circuit (three bundles of three conductors) and two shield conductors, one of which would be stranded steel and the other a fiber optic line. The fiber optic network would provide one of two redundant communication and data paths between substation/switchyards, generating stations, and the system control center. The fiber optics network would be part of the 500kV transmission line operation, not of any commercial data or other commercial system. The structures proposed for the transmission line are both steel lattice and tubular steel pole (see Section 3, Project Components). The structures would be approximately 130 to 150 feet above ground, depending on the span length required and structure type.



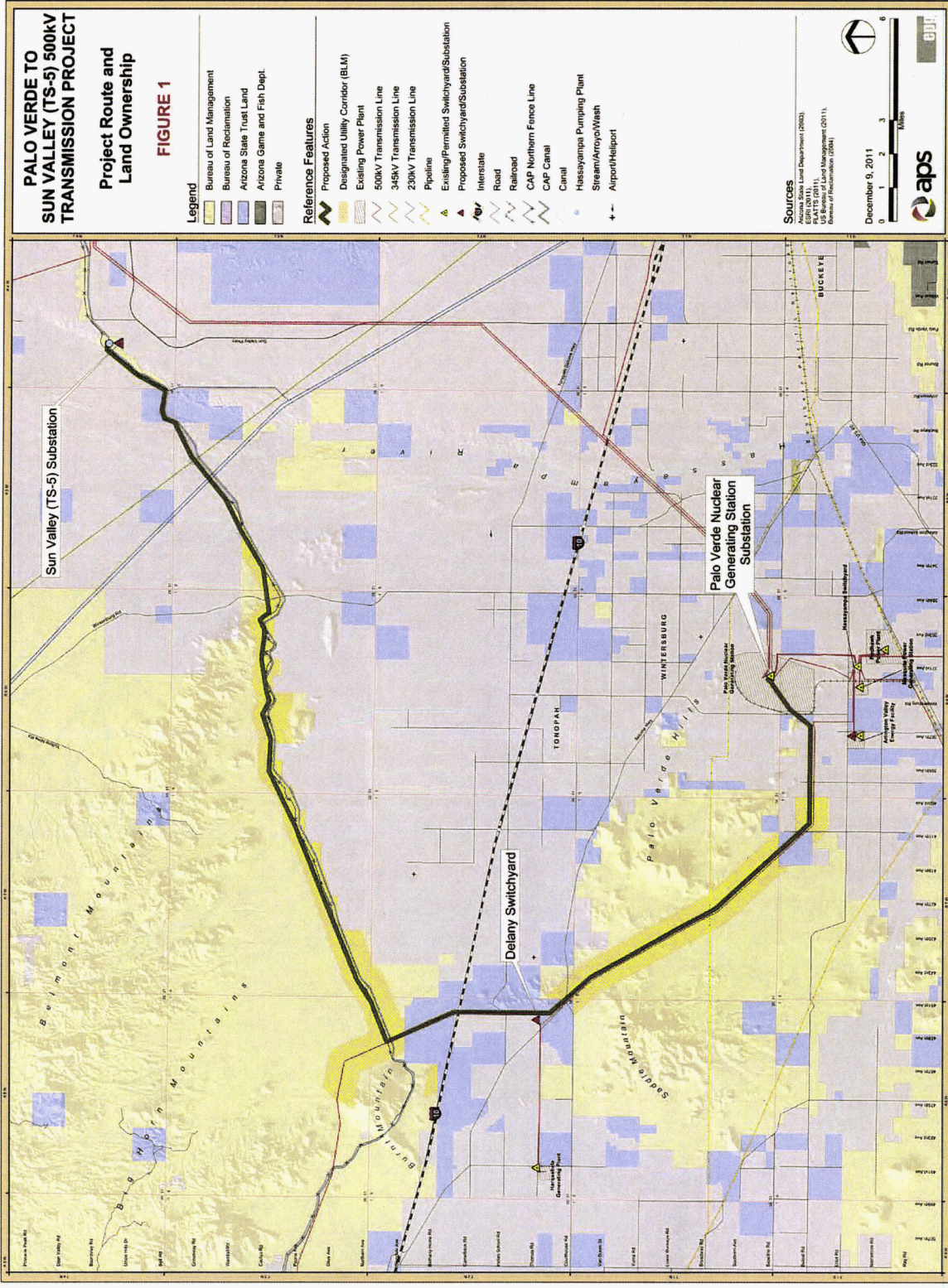


Figure 1-1. Project Overview Map

The span length between structures would vary between 800 and 1,400 feet, according to terrain conditions, and achieve site-specific mitigation objectives such as matching structure locations with existing transmission lines. The steel lattice and tubular steel pole towers would have a dulled finish, and conductors would have a low-reflective (non-specular) dulled finish to reduce visibility. Structures would be constructed to conform to the Suggested Practices for Raptor Protection on Power Lines (Avian Power Line Interaction Committee 2006). In addition, structures would comply with Federal Aviation Administration (FAA) guidelines to minimize aircraft hazards (Federal Aviation 77 regulation).

From the PVNGS to where the project intersects the CAP, the project would generally parallel the existing Palo Verde–Devers #1 line and would be built using self-supporting lattice (SSL) towers. At the intersection with the CAP Canal, the project would progress easterly and parallel the north side of the CAP within a BLM-designated utility corridor and would be built using SSL or single-pole steel structures to its terminus at the proposed Sun Valley 500kV Substation.

The project will require new right-of-way on federal, state, and private lands for the transmission structures; new access roads required for construction, operation, and maintenance; and ancillary facilities (e.g., communication regeneration stations, etc.). New roads may be required outside the transmission right-of-way.

The 500kV transmission line and switchyard will be in operation year round, transporting bulk power to the western Phoenix metropolitan area. The proposed project will take approximately 1 year to construct, with an in-service date anticipated for March 2015, and will consist of the following activities:

- one approximate 43-mile, 500kV transmission line and ancillary facilities from a new bay at the existing PV Hub at the PVNGS to the proposed Sun Valley Substation
- a new interconnection 500kV switchyard (Delany) located approximately 2.5 miles south of I-10 near Thomas Road, west of 451st Avenue
- construction of new or improved roads, providing access to the 500kV transmission line structures and ancillary facilities
- temporary work areas associated with construction activities

Approximately 26.5 miles will be located on BLM land, 1.1 miles on BOR land, 7.1 miles state land, and 8.3 miles on private lands.

## **1.2 PURPOSE AND NEED FOR THE PROJECT**

The proposed project is needed to support the increased development and growth occurring and anticipated in the western Phoenix metropolitan area. This project will strengthen the entire APS Phoenix metropolitan area transmission system that is composed of APS, Salt River Project (SRP), and Western Area Power Administration (WAPA) transmission facilities by providing an additional electrical transmission source to the valley (the Sun Valley Substation). In addition, the proposed line will increase import transmission capability into the Phoenix metropolitan area and increase export transmission capability from the PV Hub. This project allows for the CAP Canal to access the PV Hub to obtain energy to service its pumping loads.



The proposed project is consistent with the latest APS 10-Year Plan, which was filed in January 2012 with the Arizona Corporation Commission (ACC).

### **1.3 PURPOSE OF THE DRAFT PLAN OF DEVELOPMENT**

This POD outlines the stipulations and mitigation measures that will be followed during construction of the project. Environmental monitors will be employed during construction, as required, and as stipulated in this POD and by the BLM, the lead federal agency. This POD is intended to be used project-wide as: (1) a summary of project environmental requirements and protection measures; and (2) a description of the processes and procedures that will be used to ensure compliance with the requirements of the BLM and other federal, state, and/or local agencies, as appropriate.

#### **1.3.1 Relationship with Other Environmental Documents**

This POD is derived from the Palo Verde Hub to Sun Valley 500kV Transmission Project Environmental Assessment (EA) and Certificate of Environmental Compatibility (CEC) and includes input from the BLM and state agencies. The EA and CEC were completed in 2005. The analyses were conducted through the National Environmental Policy Act (NEPA) process, which identified measures for avoidance, minimization, and mitigation of environmental impacts resulting from the implementation of this project. This POD incorporates the various regulatory approvals, permits, and other authorizations that contain environmental requirements, including those measures stipulated in resource management plans (RMP) for the BLM Phoenix Field Office.

Additions and/or amendments to the POD are anticipated as a part of detailed design and construction. These additions or amendments will be reviewed and approved by the BLM prior to implementation, as appropriate. After commencement of construction, variances or deviations will be reviewed and approved by the BLM and/or Compliance Inspection Contractor (CIC) pursuant to the procedures identified in Section 4.4, Deviations During Construction, and Appendix A9 – Environmental Compliance Management Plan.

### **1.4 PLAN OF DEVELOPMENT IMPLEMENTATION ON FEDERAL, STATE, AND PRIVATE LANDS**

The POD is the Proponent's commitment to the BLM and other federal, state, and local agencies to minimize adverse environmental impacts of the project during the construction and operation phases. Therefore, standard mitigation measures, site-specific selective mitigation measures, and other specific stipulations and methods identified in the POD will be implemented as necessary over the approximately 43-mile length of the proposed project.

The BLM has required right-of-way grant holders to contract with an independent entity (i.e., a CIC), who will conduct environmental compliance inspections during the construction phase of the project. The objective is to monitor for compliance with environmental stipulations designed to protect the environment and prevent impacts from exceeding those described in the EA or

other permit approvals. The BLM CIC will be restricted to POD enforcement on BLM-administered lands.

On state and private lands, the construction contractor (see Section 2 – Project Management) will provide an environmental assurance program, including environmental monitoring activities to ensure compliance with environmental stipulations, as necessary. In addition, other jurisdictional authorities (i.e., county or city) may request environmental monitoring as part of a conditional use permit.

## 1.5 FEDERAL, STATE, AND LOCAL PERMITS

The Project conforms to the RMP for the BLM Phoenix Field Office, as well as to relevant federal, state, and local statutes, regulations, and plans. Table 1-1 documents the potential federal, state, and local agencies' approvals, reviews, and permitting requirements identified to date for this project.

<b>Table 1-1. Anticipated Local, State, or Federal Permits, Licenses, or Authorizations</b>			
<b>Approval Agency</b>	<b>Permit Potentially Required</b>	<b>Regulatory Requirement</b>	<b>Proposal Requiring Action</b>
<b>Federal</b>			
BLM	Right-of-way Grant	Bradshaw-Harquahala ROD and approved RMP, April 2010	Request for right-of-way across BLM land
BOR	Permit to cross the CAP Canal	43 U.S.C. § 1761-1771	Request for right-of-way across Reclamation land
USACE	Section 404 permit	Clean Water Act	Impacts to jurisdictional waters of the United States
USFWS	Biological Opinion	Endangered Species Act	Potential to impact threatened or endangered species
FAA	Permits	49 U.S.C. Sec 44718 and Title 14 CFR Pt 77	Obstruction standards, Hazards to air navigation
<b>State</b>			
ADEQ	AZPDES stormwater permit for construction	Clean Water Act	Required for construction activities impacting 1 acre or more
Arizona Department of Agriculture	Application for Arizona Protected Native Plants and Wood Removal	ARS Article 11 (§ R3-3-110- through R3-3-1111, Appendix A) ARS – Native Plant Law	Displacement or removal of any native plant species
ADEQ	Hazardous waste generator registration	Hazardous Waste Control Act of 1972	Generation, storage and tracking disposal of hazardous waste during project construction and operation
Arizona Corporation Commission	CEC	Title 40, Chapter 2, Article 6.2 (Sections 40-360 through 40-360.13), ARS	Transmission lines greater than two poles and greater than 115kV or power generation facilities of 100 MW or larger

<b>Table 1-1. Anticipated Local, State, or Federal Permits, Licenses, or Authorizations</b>			
<b>Approval Agency</b>	<b>Permit Potentially Required</b>	<b>Regulatory Requirement</b>	<b>Proposal Requiring Action</b>
Arizona State Land Department	Right-of-way Application	National Historic Preservation Act, Section 106, 36 CFR 800	Required for utility and access road construction on State Land; right-of-way has been issued
State Historic Preservation Office (part of Arizona State Parks)	Compliance with Section 106 of the National Historic Preservation Act in coordination with the State Historic Preservation Office and related cultural resource/Native American consultation	Threatened and endangered species review	Project activities (i.e., grading, trenching or other construction) may have potential to impact historic/cultural resources
AZGFD	None, coordination required	Threatened and endangered species review	Part of site assessment activities for ACC process
ADOT	Heavy haul permit	Arizona Motor Vehicle Division	Transport of oversized loads on roads under ADOT jurisdiction
ADOT	Encroachment permit	Rights-of-way laws (Uniform Act)	Encroachment by facilities (e.g., transmission lines, pipes, new roads, etc.) may also be required for temporary construction access along SR 74 and US 60.
CAP Canal	Permit or notification to cross the CAP Canal		Permanent easement across the CAP canal
<b>Local</b>			
Maricopa County	Dust control plan Earth-moving permit Grading permit	County Code	Construction
Maricopa County Municipal Water Conservation District	Permit		Construction
County and Local Jurisdictions Flood Plain Management	Notice to local jurisdictions, letter of requirements to fulfill	ARS 48-3609	Construction
ADEQ – Arizona Department of Environmental Quality ADOT – Arizona Department of Transportation AZPDES – Arizona Pollution Discharge Elimination System AZGFD – Arizona Game and Fish Department CEC – Certificate of Environmental Compliance USACE – U.S. Army Corps of Engineers USFWS – U.S. Fish and Wildlife Service			

## **SECTION 2 – PROJECT MANAGEMENT**

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This section discusses how the project will be managed during its construction, operation, and maintenance. It includes an overview of the roles and responsibilities of the various parties involved, and communications, procedures, and protocols.

### **2.1 ROLES AND RESPONSIBILITIES**

Presented in this section are the roles and responsibilities of the various parties who will be involved with the construction of the project. These parties include the Proponent, the BLM, the CIC, the construction contractor, and the environmental resource specialists/monitors.

#### **2.1.1 Proponent**

The Proponent is responsible for the administration of the right-of-way, and coordination between the project engineer, construction contractor, and environmental specialists. The Proponent will also be responsible for the construction, operation, and maintenance of the transmission line and ancillary facilities in a manner that complies with the conditions outlined in the BLM right-of-way grant, other required permits, and POD, as well as ensuring that activities are conducted in a manner that complies with all federal, state, and local regulations.

To help ensure that construction activities comply with all federal, state, and local regulations, the Proponent will employ a team of environmental monitors (e.g., biological, cultural, and paleontological resources, and dust), where required, to work jointly and cooperatively with the CIC (see Appendix A9 – Environmental Compliance Management Plan). Each of the Proponent's environmental monitors will provide copies of their daily reports to the CIC, as described in Appendix A9.

#### **2.1.2 Bureau of Land Management**

The BLM will serve as the lead federal agency and will designate a BLM Authorized Officer who will provide oversight for the project. The BLM Authorized Officer will be responsible for administering and enforcing the right-of-way grant and permit provisions for the BLM. The BLM will also ensure that mitigation measures and conditions of approval contained in this POD are adhered to during project construction, operation, and maintenance. The BLM Authorized Officer will be responsible for written stop-and-resume work orders, and resolving any conflicts that may arise relating to the project on land administered by the BLM. Compliance will be managed by the BLM Authorized Officer and other BLM resource specialists as needed, in conjunction with the CIC. The process by which the BLM and the Proponent will conduct environmental monitoring, compliance, and reporting activities is described in Appendix A9.

#### **2.1.3 Compliance Inspection Contractor**

The CIC is an on-site agent of the BLM and other cooperating agencies, retained by the Proponent, who provides on-site compliance inspections and monitoring. This service helps to promote environmental protection and ensures compliance with BLM requirements, based on the

commitments established in the POD. Prior to construction, the CIC will develop a Project Compliance Plan that will describe how the Proponent will uphold, document, and manage environmental compliance with the terms specified in the right-of-way grant, the POD, land owner agreements, and all federal, state and local permits. The Plan will include, but is not limited to, the following elements:

- the roles and responsibilities of participants necessary to facilitate environmental compliance with the terms and conditions of the right-of-way grant and the POD in the field during construction
- a comprehensive inspection and monitoring program
- corrective procedures in the event of noncompliance
- a standard protocol for variance requests
- a communication plan describing primary channels of routine communication between parties for project updates and compliance related issues
- a reporting process that includes forms and reports to be completed on a regular basis during the course of construction
- a comprehensive project-specific environmental compliance training program that may include sections prepared by specific resource specialists

The CIC will report directly to the BLM Authorized Officer, who will coordinate with other cooperating agencies, where appropriate. The duties of the CIC in support of the project will include:

- preparation of a Project Compliance Plan
- coordination of Notice-to-Proceed meeting(s)
- preparation and maintenance of a Key Contacts List
- periodic meetings with the BLM Authorized Officer and resource specialists
- daily field inspection of the project area
- coordination with the Proponent's monitoring personnel and construction contractor
- completion of a daily compliance inspection report and submittal of a weekly summary report with applicable photographs to the BLM and Proponent
- attendance at weekly construction meetings
- review of variance requests
- completion of an End of Construction Project Report

In addition to these duties, the CIC will coordinate with the BLM, Proponent, and construction contractor concerning work stoppage orders and temporary suspensions, noncompliance activities identified by environmental monitors, and the resolution of any noncompliance issues as they arise.

#### **2.1.4 Construction Contractor**

The construction contractor will be retained by the Proponent to construct the 500kV transmission line and ancillary facilities, including construction of new or improved roads, a project communication system, and temporary work areas associated with construction activities. The construction contractor will also be responsible for addressing any changes during construction and reclamation activities following the completion of construction activities.

During peak construction periods, it is anticipated that as many as approximately 75 workers will be employed. The construction workforce may include the following:

- General Contractor, specializing in transmission line construction
- Substation Construction Contractor
- Survey Crews
- Tree Clearing Crews (where necessary)
- Road Construction Crews
- Foundation and Anchor Installation Crews
- Structure Steel Haul Crews
- Structure Assembly and Erection Crews
- Wire Installation Crews
- Cleanup Crews
- Restoration Contractor/Crews
- Quality Assurance Inspectors
- Drilling and Blasting Contractor
- Restoration/Reseeding Subcontractor

The construction contractor's construction manager will be responsible for enforcing the contract requirements. Provisions will be made in the contract for suspension of work, in whole or in part, and for corrections of faulty work performed by the contractor or others. Provisions will be made for back charges to the contractor when necessary. The construction contractor will be legally bound to the requirements of the POD as stipulated in the contract documents, and compliance with environmental regulations will be a condition of employment.

## **2.2 COMMUNICATION PROCEDURES AND PROTOCOLS**

Effective communication between the parties mentioned above is a critical component to the success of the project. Communication protocols related to environmental compliance monitoring, reporting requirements, and project variance requests are described further in Appendix A9 – Environmental Compliance Management Plan . Additional details regarding emergency agency notification (e.g., in case of wildfire, unanticipated discoveries of cultural resources, hazardous material spill, etc.) are presented in the various plans included as appendices to the POD. The selected construction contractor will attend preconstruction conferences with the BLM and Proponent following award of the construction contract.

The CIC will develop a Project Contact Directory that will be updated by all parties, as needed, to provide a convenient reference during the construction phase of the project. This list will include the name, agency, office and cell phone numbers, and email address of the individuals working on the project, and will be updated as required. The Construction Contractor will be responsible for maintaining a list of all emergency notification contacts and numbers (local law and fire officials, hospitals, etc., [see Appendix A8 – Emergency Preparedness and Response Plan Guidelines]) for events such as wildfires, hazardous material spills, accidents, etc. The Proponent will be responsible for notifying private land owners of upcoming construction activities, where appropriate. After construction, the Proponent will be responsible for maintaining the Key Contacts List and for all notifications required during the operation and maintenance of the project.

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## SECTION 3 – PROJECT COMPONENTS

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This section introduces the components associated with the construction of the project, and contains a brief description of the facility design, including the overhead transmission lines, tower and pole structures, foundations, conductors, insulators and associated hardware, overhead ground wire, and access roads; as well as information regarding induced currents on adjacent facilities, land requirements, and construction disturbance.

### 3.1 PROJECT FACILITIES

The design, construction, operation, and maintenance of the project will meet or exceed the requirements of the NESC and U.S. Department of Labor's Occupational Safety and Health Administration. The construction contractor will be responsible for properly grounding all metallic fences that parallel the transmission line for more than 500 feet and are located within 150 feet of the centerline. Grounding will also include large metal buildings and other types of metallic objects within 150 feet of the centerline.

Based on Avian Power Line Interaction Committee (2006) recommendations, adequate three-conductor phase spacing (60 inches or greater for eagle protection) will be implemented. In addition, shield wires will be grounded at regular intervals. Characteristics of the transmission line are described below and summarized in Table 3-1.

#### 3.1.1 Overhead Transmission Lines

One single circuit 500kV overhead transmission line will be constructed for the proposed project. The transmission line will extend between the existing PV Hub Substation and the proposed Sun Valley Substation for approximately 43 miles. The 500kV structures would require a right-of-way width of up to 200 feet. In some instances, the design of the structures may vary based on field and right-of-way conditions.

#### 3.1.2 Transmission Structures

Five typical 500kV structure types could be used for the proposed project, including SSL, self-supporting tubular (SST), dead-end lattice (DEL), dead-end tubular (DET), and Dead-end Tubular, 3-pole (DET3). The locations for each structure type would be determined during final design, and selected based on site-specific conditions (i.e., topography, terrain, constrained right-of-way, etc.) or to mitigate impacts resulting from the project. Proposed structures will vary in height, with none anticipated to exceed 200 feet, in order to remain below the threshold at which the structure may affect navigable airspace based on FAA regulations. Additional structure types may be identified during future engineering and design.

A description for each structure type that may be used for the project is described in detail following Table 3-1. In addition, typical configurations and dimensions of each alternating current (AC) structure are depicted on Figure 3-1 through Figure 3-5.



<b>Table 3-1. Typical Design Characteristics of the 500kV Transmission Lines</b>	
<b>Feature</b>	<b>Description</b>
Line length	Approximately 46 miles
Structure type	self-supporting tubular or lattice structures
Structure height	130 to 150 feet; range of height varies with span and terrain
Span length	800 to 1,400 feet (4 to 5 structures per mile)
Right-of-way width (typical)	200 feet per transmission line
<b>Electrical Properties</b>	
Nominal voltage in kilovolts	500kV to 525kV AC
Capacity in megawatts	1,500 MW
Circuit configuration	Horizontal, vertical, or delta
Conductors 1590 ACSR 'Lapwing,' 1.5-inch diameter conductor (3 conductors/bundle)	3 conductor bundles per phase
Minimum conductor clearance above ground (per NESC requirements)	30 to 35 feet
<b>Land Permanently Required</b>	
Self-supporting lattice 3-foot diameter x 4 legs (28 sq feet)	3,600 sq feet
Self-supporting tubular 8-foot diameter (50 sq feet)	2,825 sq feet
Dead-end lattice 6-foot diameter x 4 legs (112 sq feet)	3,025 sq feet
Dead-end tubular AC <sup>1</sup> – 10-foot diameter (78.5 sq feet) DC – 12-foot diameter (80.5 sq feet)	3,300 sq feet
Access roads (improve existing, spur, and new)	20-foot travel surface and 2-foot wide berms/drainage on each side = 24 feet total width
<b>Land Temporarily Disturbed</b>	
Structure work area	Each structure site will be 200 feet x 200 feet (0.9 acre)
Concrete batch plant	Two plants; approximately 3 to 5 acres per site
Wire pulling/tensioning sites	Each site will be 200 feet x 600 feet (2.8 acres); one every 9,000 feet
Access roads (improve existing, spur, and new)	20-foot travel surface and 2-foot wide berms/drainage on each side = 24 feet total width
<b>Access Roads</b>	
Existing paved roads	These roads are typically highways and state routes, and will be used for travel to existing and new dirt roads to access the right-of-way (e.g., I-10, Salome Highway, etc.).
Existing dirt roads (no improvements)	Requires no improvement to dirt/gravel road
Existing dirt roads (with improvements)	Improvement of existing dirt road up to 24-foot-wide access road (20-foot road + two 2-foot berms/drainages on either side)
New overland access (drive and crush or clear and cut)	24-foot-wide overland access road
New access road (bladed)	Construction of 24-foot-wide dirt access road (20-foot road + two 2-foot berms/drainages on either side)
NOTES: <sup>1</sup> Per pole; the dead-end structure for the AC line could have a single pole or three pole configuration ACSR – aluminum conductor steel-reinforced	

#### **3.1.2.1 Self-Supporting Lattice**

The single-circuit, SSL steel structure will be made of galvanized steel (Figure 3-1). The typical structure height is approximately 135 feet, and ranges between 130 and 150 feet. The average structure span is approximately 1,200 feet. The SSL could be used as a tangent structure, but also could accommodate angles up to 30 degrees.

#### **3.1.2.2 Self-Supporting Tubular**

The single-circuit, single-pole tubular steel structure will be made of self-weathering or galvanized steel (Figure 3-2). Typical structure height ranges between 140 and 170 feet, with an average structure span of approximately 1,000 feet. The SST has a smaller footprint and typically will be used in areas of narrow or constrained right-of-way. However, the structures are taller and have a shorter span (requiring more structures per mile) than other tangent structures proposed for the project.

#### **3.1.2.3 Dead-End Lattice**

A single-circuit, self-supporting, DEL structure made of galvanized steel (Figure 3-3) will primarily be used for large angles or terminations. The DEL has a larger footprint than the SSL, due to a larger base and a wider horizontal configuration. The typical structure height is approximately 135 feet, with typical structure height ranging between 130 and 150 feet.

#### **3.1.2.4 Dead-End Tubular**

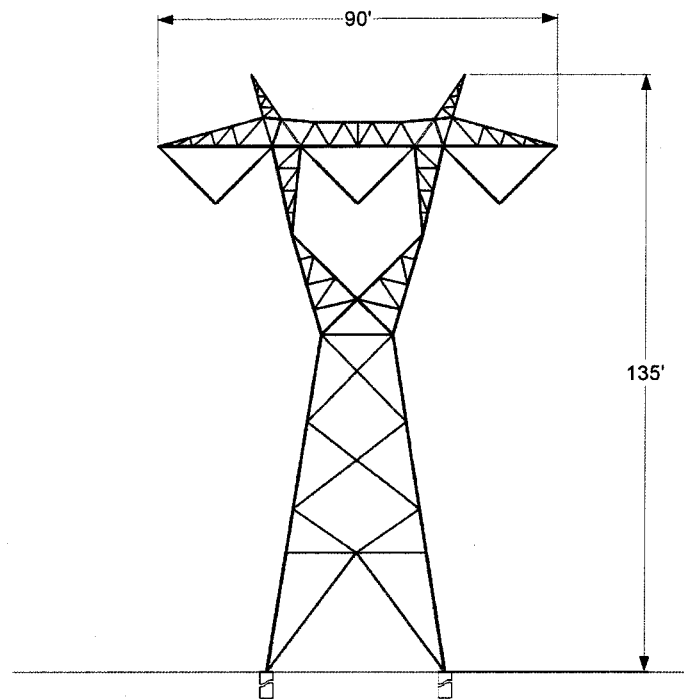
A single-circuit, self-supporting, DET structure made of self-weathering or galvanized steel (Figure 3-4) will primarily be used for larger angles in those areas where right-of-way may be too constrained to accommodate the DEL structure. The typical structure height is approximately 145 feet, with typical structure height ranging between 130 and 150 feet.

#### **3.1.2.5 Dead-End Tubular, 3-Pole**

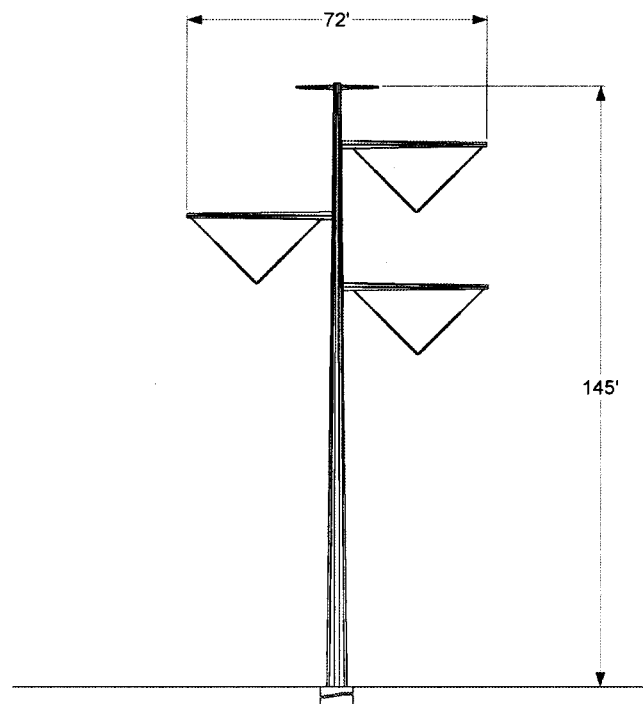
This alternative to the DET is a self-supporting tubular steel structure also used for larger angles; however, this structure includes three poles, each with a single conductor bundle (Figure 3-5). The typical structure height is approximately 100 feet. The DET3 will be used for the AC structure in areas where a lower height is desired, although the three adjacent structures will require additional right-of-way and have a larger footprint.

### **3.1.3 Structure Foundations**

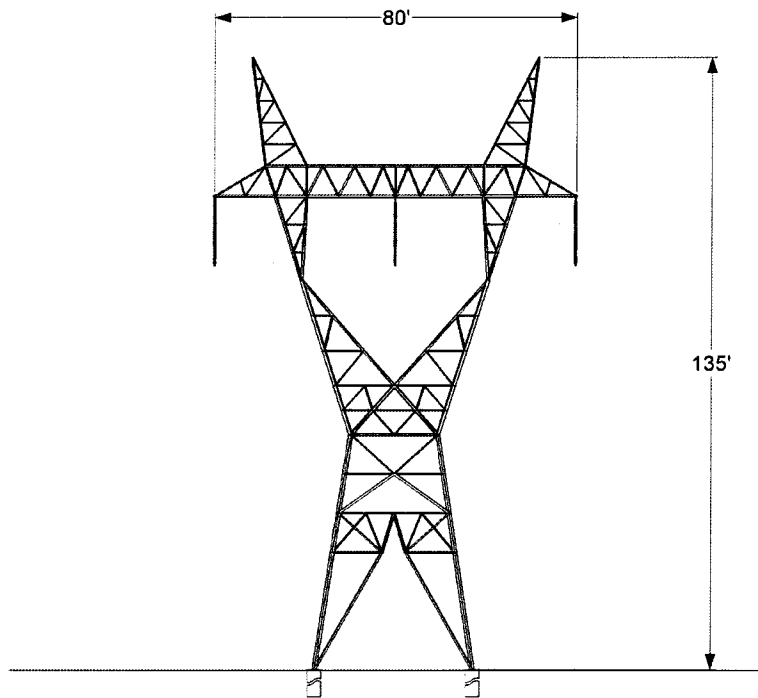
Each structure type requires specific foundations. SSL structures will require four cast-in-place drilled pier footings, each ranging from 3 to 6 feet in diameter (based on soil conditions) and 15 to 40 feet in depth. The foundations will be installed by placing reinforcing steel and a structure stub into the foundation hole, positioning the stub, and encasing the stub in concrete.



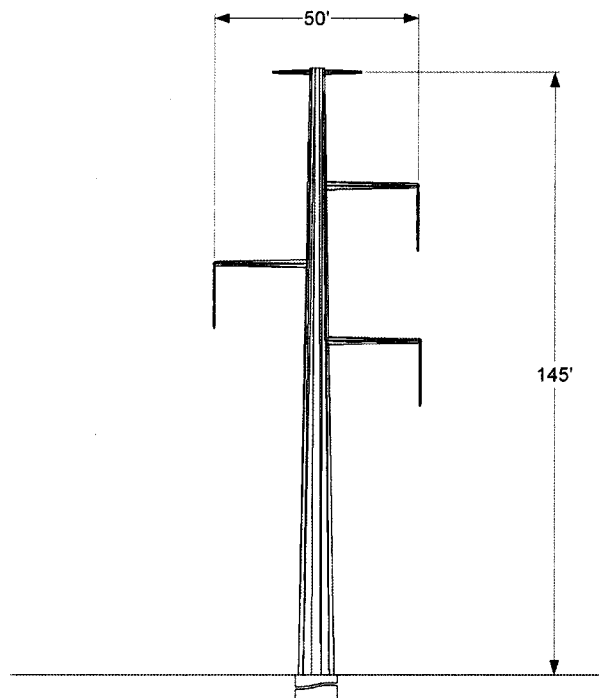
**Figure 3-1. Typical AC Self-Supporting Lattice Tangent Structure**



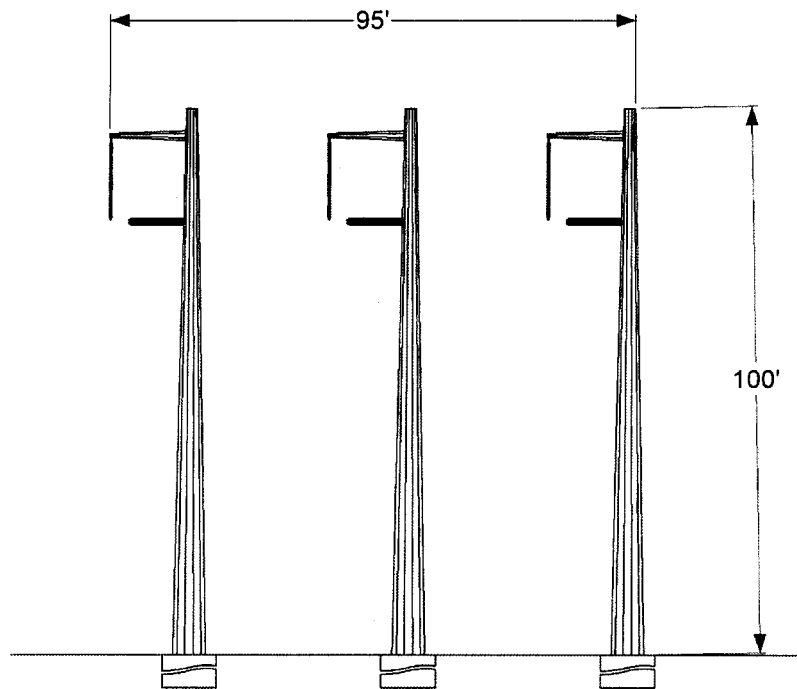
**Figure 3-2. Typical AC Self-Supporting Tubular Tangent Structure**



**Figure 3-3. Typical AC Self-Supporting Lattice Dead-End Lattice Structure**



**Figure 3-4. Typical AC Self-Supporting Dead-End Tubular Structure**



**Figure 3-5. Typical AC Self-Supporting Dead-End Tubular 3-Pole Structure**

SST structures will be installed on a cast-in-place-drilled pier foundation, typically 6 feet in diameter, but may range from 4 to 8 feet in diameter based on soil conditions. The drilled pier foundations will be 20 to 50 feet deep.

DEL structures will require four cast-in-place footings on drilled pier foundations, typically 6 feet in diameter, but may range from 4 to 8 feet in diameter based on soil conditions. The drilled pier foundations will be 20 to 50 feet deep.

The DET structures (either single pole or 3-pole configuration) are installed on a cast-in-place-drilled pier foundation (per pole), which typically would be 10 feet in diameter, but may range from 8 to 12 feet in diameter based on soil conditions. The drilled pier foundation will be 20 to 50 feet deep.

#### **3.1.4 Conductors**

Conductors for the project will be aluminum stranded with a steel reinforced core, known as the aluminum conductor steel-reinforced (ACSR) design. The aluminum carries most of the electric current, while the steel provides tensile strength to support the aluminum strands. The 500kV AC transmission lines will consist of three phases, with a three-conductor bundle (i.e., three sub-conductors) per phase in a triangle, 18 to 24 inches per side.

The minimum conductor height above the ground for the 500kV AC transmission lines will be 30 to 35 feet, at 176 degrees Fahrenheit conductor operating temperature, based on NESC and

the Proponent's design standards. The exact height of each structure would be governed by topography and safety requirements for conductor clearance.

Based on Avian Power Line Interaction Committee recommendations (Edison Electric Institute and Avian Power Line Interaction Committee 2006), adequate three-conductor phase spacing (60 inches or greater for avian protection) will be implemented.

Conductors are supplied on reels up to approximately 9,000 feet in length. At the location where one reel ends and another begins, splicing is required to make a continuous run along the conductor. Splices may be either compression type or implosive charge type. If implosive type splices are used, the construction contractor will incorporate appropriate references and requirements into Appendix A5 – Blasting Plan Methodology

In order to reduce vibration fatigue on installed conductor and associated hardware, vibration dampers may be installed on the conductor where required and as specified in the final design.

### **3.1.5 Insulators and Associated Hardware**

Insulators, which are made of an extremely low conducting material such as porcelain, glass, or polymer, are used to suspend the conductors from each structure. Insulators inhibit the flow of electrical current from the conductor to the ground, the structure, or another conductor. Insulator material will be selected based on electrical properties and maintenance practices according to final Project engineering. The assemblies of insulators are designed to maintain electrical clearances between the conductors, structure, and ground. A permanent assembly of insulators, ranging from 20 to 28 feet long, will be used to position and support each of the three conductor bundles to the structures. Insulator assemblies may be either "V" shaped or "I" shaped (vertical) for the tangent structures, and "I" shaped (horizontal) for the dead-end structures. (See figures 3-1 through 3-5 for illustrations of the insulators for the proposed structure types).

### **3.1.6 Overhead Groundwire and Electrodes**

To protect conductors from lightning strikes, two overhead groundwires will be installed on the top of the structures. Current from lightning strikes will be transferred through the groundwires and structures into the ground. The groundwires will be extra-high-strength steel with a 0.5-inch diameter. One or both of the overhead groundwires will be a fiber optic groundwire (OPGW). An OPGW up to 1 inch in diameter will facilitate data transfer (required for system control and monitoring) between the transmission facilities along the fiber path. The fiber optics network would be part of the 500kV transmission line operation and not part of any commercial data or other commercial system.

### **3.1.7 Grounding**

Ground rods will be installed next to the structure foundations to prevent a lightning strike from damaging the overhead conductors. Lattice towers will have up to four grounds installed per structure, and steel-pole structures will have up to two grounds installed per structure. After the ground rods have been installed, the grounding will be tested to determine resistance. If measurements indicate a high resistance, counterpoise will be installed that will consist of

trenching in-ground wire to a depth of 12 inches in noncultivated land and 18 inches in cultivated land, with a ground rod driven at the end. The counterpoise will be contained within the limits of the right-of-way and may be altered or doubled back and forth to meet the requirements of the project.

### **3.1.8 Other Electrical Hardware**

In addition to the conductors, insulators, and overhead shield wires, other hardware will be installed on the tower as part of the insulator assembly to support the conductors and shield wires. This hardware will include fasteners, clamps, shackles, links, plates, and various other hardware composed mostly of galvanized steel and aluminum. To the extent possible, electrical hardware will be specified as "corona-free," in order to reduce the effects of audible noise and electrical stress caused by corona in high-voltage applications.

### **3.1.9 Other Non-Electrical Hardware**

Other hardware not associated with the transmission of electricity may be installed as part of the project. This hardware may include aerial marker spheres or aircraft warning lighting, as required for the conductors or structures per FAA regulations. Structure proximity to airports and structure height are the determinants of whether FAA regulations will apply, based on an assessment of wire/tower strike risk. The Proponent does not anticipate structure lighting will be required, since all proposed structures are less than 200 feet tall and are not near airports that require structure lighting.

### **3.1.10 Access Roads**

Five types of access will be used for this transmission line: paved roads, dirt roads that will not require improvements, dirt roads that may require improvements, new bladed access roads, and overland access. For a more detailed description of these access types and stipulations associated with them, see Appendix A3 – Transportation Management Plan. .

Access to the right-of-way will be via existing roads and trails, to the extent practicable. These existing roads and trails will be used in their present condition without improvements, unless improvements are required or are deemed to be in the best interest of the Project and for future use. In areas where improvements are required, roads and trails will be graded to provide a smooth travel surface. Where existing roads and trails can be used to access the right-of-way, only spur roads to each structure site will be required. Access on the right-of-way, other than in specific areas, will require a road graded to a width of up to 20 feet, with a 2-foot berm on either side. New roads will typically go directly from structure to structure, except on hillsides, ridgebacks, rock outcrop areas, wash crossings, treed areas, or in areas where sensitive environmental resources can be avoided. In such cases, the road will follow suitable topography from structure to structure and will be built in areas that generally cause the least amount of overall disturbance.

New roads that must be graded for access in steep terrain (side-hill roads) will most likely exceed a 24-foot width of disturbance, due to cut and fill conditions; however, the travel surface width will not exceed 24 feet.

### 3.1.11 Substations/Switchyards

One new 500kV switchyard (Delany), requiring 30 acres of land, will be required for the proposed project. The majority of the acreage for the site will be used for switchyard components; however, a portion of the site acreage will be used as a buffer for placement of transmission structures, both entering and exiting the switchyard.

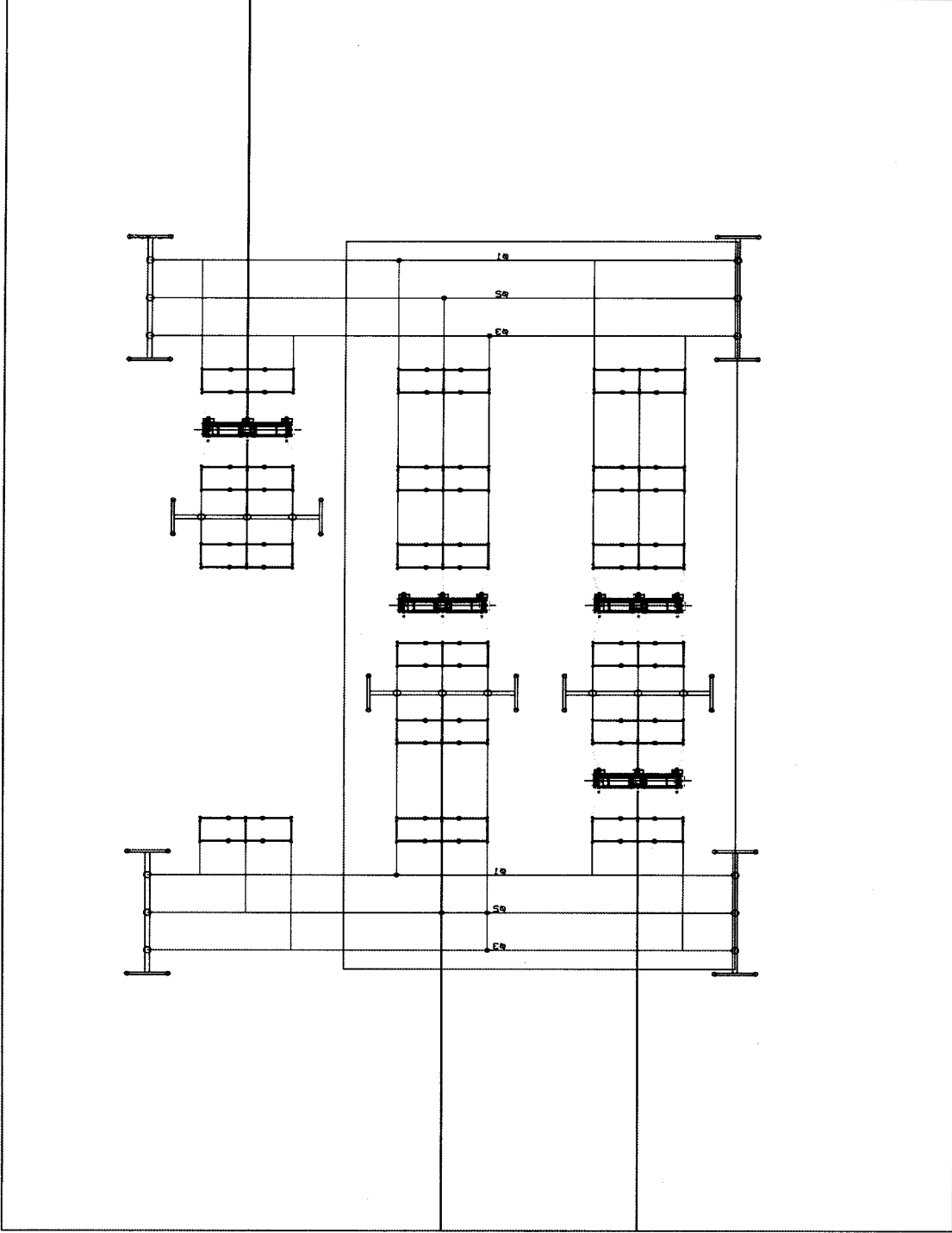
The maximum height of structures in the switchyard will be approximately 170 feet. The switchyard will be open air and include equipment such as transformers, circuit breakers, disconnect switches, lightning/surge arrestors, reactors, capacitors, bus (conductor) structures, and a microwave antenna. The switchyard will be surrounded by an 8-foot-high chain-link fence topped with barbed-wire. Typical design characteristics for the substations are listed in Table 3-2, and a proposed layout is shown on Figure 3-6.

<b>Table 3-2. Typical Design Characteristics of a 500kV Switchyard</b>	
Equipment	<ul style="list-style-type: none"> <li>• Transmission line takeoff structures</li> <li>• Power circuit breakers</li> <li>• Power transformers</li> <li>• Switches equipment</li> <li>• Bus work or bus conductor</li> <li>• Control house</li> <li>• Microwave antenna</li> <li>• Current limiting reactor</li> </ul>
Access road <ul style="list-style-type: none"> <li>• Width</li> <li>• Road surface</li> <li>• Grading</li> </ul>	<ul style="list-style-type: none"> <li>• Minimum 24 feet wide, based on site-specific conditions (a maximum of 28 feet including drainage/berms on each side)</li> <li>• Gravel</li> <li>• Heavy road base to support larger equipment</li> </ul>
Fire protection facilities	<ul style="list-style-type: none"> <li>• Fire-wall barriers for protection from transformers</li> </ul>
Switchyard grounding	<ul style="list-style-type: none"> <li>• Use copper wire for personnel safety and grounding</li> </ul>
Land temporarily disturbed	<ul style="list-style-type: none"> <li>• Approximately 40 acres (in addition to the permanent disturbance)</li> </ul>
Land permanently disturbed <sup>1</sup>	<ul style="list-style-type: none"> <li>• Site-specific – 30 acres</li> </ul>
Voltage	<ul style="list-style-type: none"> <li>• 500kV</li> </ul>

<sup>1</sup> May include areas outside fenced areas

As proposed, the project will interconnect the existing PV Hub Substation at the southern terminus with the proposed Sun Valley Substation at the northern terminus. The Delany Switchyard would be located approximately 2.5 miles south of I-10 near Thomas Road west of 451st Avenue. The Sun Valley Substation has been permitted and will be constructed by APS as a part of the Sun Valley to Trilby Wash 230kV Project.





**Figure 3-6. Proposed Delany Switchyard Layout**

### 3.2 INDUCED CURRENTS ON ADJACENT FACILITIES

AC transmission lines, such as the project transmission line, have the potential to induce currents on adjacent metallic structures such as other transmission lines, railroads, pipelines, fences, or structures that are parallel to, or cross the transmission line. Induced currents on these facilities occur to some degree during steady-state operating conditions and during a fault condition on the transmission line. For example, during a lightning strike on the line, the insulators may flash over, causing a fault condition on the line; current will flow down the structure through the grounding system (i.e., ground rod or counterpoise) and into the ground. The magnitude of the effects of the AC-induced currents on adjacent facilities is highly dependent on the magnitude of the current flows in the transmission line, the proximity of the adjacent facility to the line, and the distance (length) for which the facilities and the line parallel one another in proximity.

As standard practice and as part of the design of the project, electrical equipment and fencing at the substation/switchyard will be grounded. If applicable, grounding of metallic objects outside of the right-of-way also may be implemented, depending on the distance from the transmission line, as determined through the electrical studies. These actions take care of the majority of induced current effects on metallic facilities adjacent to the line by shunting the induced currents to the ground through ground rods, ground mats, and other grounding systems, thus reducing the step and touch potential a person may experience when touching a metallic object near the line (i.e., reduce electric shock potential)

Although not planned, any cases in which longer parallel facilities, such as a pipeline or other transmission line would be built parallel to the project over several miles, additional electrical studies may be undertaken by the Proponent to identify other mitigation measures that may need to be implemented to prevent damaging currents from flowing onto the parallel facility and to prevent electrical shock to any people who may come in contact with the parallel facility. Typical mitigation measures that could be implemented, depending on the degree of mitigation needed, can include the following (National Association of Corrosion Engineers [NACE] International 2003):

- **Fault Shields.** Shallow grounding conductors connected to the affected structure adjacent to overhead electrical transmission towers, poles, substations, etc. They are intended to provide localized protection to the structure and pipeline coating during a fault event from a nearby electric transmission power system.
- **Lumped Grounding.** Localized conductor or conductors connected to the affected structure at strategic locations (e.g., at discontinuities). They are intended to protect the structure from both steady-state and fault AC conditions.
- **Gradient Control Wires.** A continuous and long grounding conductor or conductors installed horizontally and parallel to a structure (e.g., pipeline section) at strategic lengths and connected at regular intervals. These are intended to provide protection to the structure and pipeline coating during steady-state and fault AC conditions from nearby electric transmission power systems.

- **Gradient Control Mats.** Typically used for aboveground components of a pipeline system, these are buried ground mats bonded to the structure, and are used to reduce electrical step and touch voltages in areas where people may come in contact with a structure and be subject to hazardous potentials.

Permanent mats bonded to the structure may be used at valves, metallic vents, cathodic protection test stations, and other aboveground metallic and nonmetallic appurtenances where electrical contact with the affected structure is possible. In these cases there is no standard solution that will solve these issues every time. Instead, each case must be studied to determine the magnitude of the induced currents and the most appropriate mitigation given the ground resistivity, distance paralleled, steady-state and fault currents, fault clearing times expected on the transmission line, and distance between the line and paralleling facilities, to name a few of the parameters. In the instance that the electrical studies indicate a need to install cathodic protection devices on a parallel facility, a distribution supply line interconnection may be needed to provide power to the cathodic protection equipment.

### **3.3 LAND REQUIREMENTS AND PROJECT DISTURBANCE**

This section describes the permanent and temporary right-of-way and disturbance types anticipated for the Project. As further details of the final Project design are engineered, the amount of land required or disturbed may change. All details of final design will be documented in the POD.

#### **3.3.1 Right-of-Way Acquisition**

New permanent and temporary land rights are required for the transmission line facilities, such as the transmission line corridor, access roads, and temporary work sites (e.g., right-of-way grant, easements, license agreement, and fee simple). The Proponent has requested permanent right-of-way for a width of up to 200 feet for the transmission line. The right-of-way width must be sufficient to accommodate "conductor blowout" (the swinging of the conductor midway between structures) due to wind, as well as maintenance clearances at the structure sites. The right-of-way will be used for construction, operation, and maintenance of the project. In addition, temporary permission from landowners or land-management agencies will be required during construction for off-right-of-way access, staging areas, construction yards, and material storage. The Temporary Use Permit Application has been submitted to the Arizona State Land Department and is pending approval as of September 2012.

Additional temporary right-of-way may be required in areas where the proposed transmission lines turn at a sharp angle. These locations will require wire pulling and tensioning activity during the construction phase of the project, and typically require up to 600 feet of temporary right-of-way to accommodate wire pulling and tensioning equipment. Access roads may be located outside of the transmission line right-of-way where required, due to steep terrain or other restrictive site conditions (i.e., sensitive environmental resources that should be avoided). Access roads will be identified and depicted in the final engineering documents and approved by the BLM prior to construction. Areas that are used temporarily (e.g., roads, staging areas, batch plants, etc.) require temporary use permits, which were filed with the BLM in December 2007.

### 3.3.2 Project Disturbance

Areas of temporary and permanent disturbance for the construction areas will be calculated using geographic information systems (GIS) per specifications presented on Table 3-1. Table 3-3 presents the total disturbance acreages across administrative jurisdictions.

<b>Table 3-3. Total Disturbance Acreages across Administrative Jurisdictions for the PV Hub to Sun Valley Project</b>			
<b>Jurisdiction</b>	<b>Disturbance Acres for Temporary Use</b>	<b>Disturbance Acres for Permanent Use</b>	<b>Total Disturbance Acres</b>
BLM	41.18	615.95	657.13
BOR	0.0	42.5	42.5
State	11.8	162.74	174.54
Private	0.0	0.0	0.0
5% contingency for project variations	2.06	41.06	43.12
<b>Total</b>	<b>55.04</b>	<b>862.25</b>	<b>917.29</b>

A typical temporary disturbance area of 200 feet by 200 feet has been assumed for each structure work area. Actual dimensions of the temporary area of disturbance may vary, depending on factors such as terrain and vegetation. Dimensions of the temporary area of disturbance may vary, and will be monitored and documented by the CIC during project construction (see Appendix A9 – Environmental Compliance Management Plan).

A permanent work area at the base of each structure is required for long-term maintenance activities. While revegetation could occur in this work area, minimal contouring will be performed and some land uses may be restricted. See Table 3-1 for the dimensions of this permanent work area for each structure type.

Temporary and permanent work areas will be delineated by the construction contractor in coordination with the CIC prior to construction, and the CIC will track the actual project disturbance acreage. If either the amount of permanent or temporary actual disturbance exceeds the acreage presented above, consultation with the BLM and other agencies will be required.

### 3.4 EXISTING RIGHT-OF-WAY AND LINE CROSSINGS

The project will require the crossing of various electrical distribution and transmission lines along the alignment, as listed below. In all cases, the project will cross over the top of these existing facilities. In addition, the proposed line will cross U.S. and state highways in certain locations.

- CAP Canal
- The Agua Fria River
- Wickenburg Road
- Devers to Palo Verde No. 1 500kV Transmission Line (east of Burnt Mountain to Palo Verde)

- Interstate Highway 10
- Salome Highway
- 379th Avenue

Applications for licenses or rights-of-way to permit these crossings will be submitted to appropriate agencies or entities for approval prior to initiating construction. In these areas, safety precautions will be taken to ensure that there are no conflicts with continued use of these existing facilities, and guard structures will be erected as outlined in Appendix A1 – Construction Plan and Program.

### **3.5 DESCRIPTION OF THE PROPOSED TRANSMISSION LINE RIGHT-OF-WAY**

The project originates at the PVNGS on private lands at T1N R6W S4 and heads southwest before heading directly west within that same section. The project enters BLM-administered land and the BLM designated Utility Corridor at T1S R7W S1 before entering State lands at T1S R7W S2 to head northwest. The project re-enters BLM lands at T1N R7 S35, continues northwest until entering State lands at T2N R8W S36, then heads directly north to T2N R8W S13 before trending northwest to re-enter BLM lands at T2N R8W S2. The project crosses the CAP Canal before turning east-northeast to parallel the canal on the north side to T3N R5W S17 before entering private lands. The project enters BOR lands at T3N R5W S9 and continues northeast to the project terminus at T4N R4W S20, leaving BOR lands to cross State lands at T4N R5W S36. Refer to Appendix F for Construction Maps.

#### **3.5.1 Federal Land Sections**

##### **3.5.1.1 Bureau of Land Management**

The project enters BLM administered lands from private land and state administered lands (see section 2.5.2 below), following the designated utility corridor trending northwest thru the following sections before entering State lands.

- Township 2 North, Range 7 West, Section 31
- Township 1 North, Range 7 West, Sections 6, 7, 8, 9, 16, 17, 21
- Township 1 South, Range 7 West, Sections 1 and 2

The project enters the designated BLM utility corridor from state lands (see section 3.5.2 below) and continues to follow the CAP Canal, running generally east-northeast, then crosses the following sections before entering private and BOR lands:

- Township 3 North, Range 5 West, Sections 17 and 18
- Township 3 North, Range 6 West, Sections 13-19
- Township 3 North, Range 7 West, Sections 22, 23, 24, 26, 27, 28, 29, 31, 32
- Township 3 North, Range 8 West, Section 36
- Township 2 North, Range 8 West, Sections 1 and 2

The proposed project exits the designated BLM utility corridor onto private lands and BOR lands and continues to follow the CAP Canal, running generally west-southwest to the project terminus at T4N R4W S29.

#### **3.5.1.2 Bureau of Reclamation**

The proposed 500kV transmission line's northern-most terminus point is on BOR lands that follow the CAP Canal after leaving BLM administered lands (see above). The transmission line trends generally southwest to northeast and crosses the following sections:

- Township 4 North, Range 4 West Sections 20, 29, 30, 31
- Township 3 North, Range 5 West Sections 2, 3, 8, 9, 10

#### **3.5.2 State Land Sections**

The proposed project enters state-administered lands at T1S R7W S1 after leaving BLM lands south of I-10 and returning to BLM lands north of I-10. The proposed project re-enters state lands at T2N R8W S36 and re-enters BLM lands at T2N R8W S2. The following sections are state lands crossed by the project:

- Township 4 North, Range 5 West, Section 36
- Township 2 North, Range 8 West, Sections 11, 12, 13, 24, 25, 36
- Township 1 North, Range 7 West, Section 2

Township 1 South, Range 6 West, Section 4

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## **SECTION 4 – PROJECT CONSTRUCTION**

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This section discusses the construction of the proposed project. Topics include a brief overview of the construction activities, the construction workforce, environmental and safety training, and the process that will be followed to address any variances or deviations that may be required during construction.

### **4.1 CONSTRUCTION ACTIVITIES**

Construction of the transmission line will include the following sequence of activities:

- surveying and staking the transmission centerline, other project features, and work areas
- upgrading or constructing temporary and permanent access roads
- clearing and grading activities for the right-of-way, tower sites, staging areas, and batch plants
- excavating and installing foundations
- assembling and erecting structures with temporary and permanent work areas
- conventional method of assembly and erection
- helicopter method of assembly and erection
- stringing conductors and shield wires
- installing counterpoise (tower grounds), where needed
- cleanup and reclamation of affected areas

The activities provided above are described in detail in Appendix A1 – Construction Plan and Program, which includes information regarding other preconstruction and construction components such as:

- preconstruction resource surveys and aerial photography
- right-of-way preparation
- additional preconstruction activities
- construction storage yards and concrete batch plants
- equipment staging areas
- equipment refueling areas
- helicopter use and refueling

In addition, Appendix A – Construction Considerations, includes detailed information related to the construction of the project, such as:

- flagging, fencing, and signage
- transportation management
- fire protection
- blasting
- erosion/dust control and air quality
- hazardous materials management
- emergency preparedness and response
- environmental compliance management



## 4.2 CONSTRUCTION WORKFORCE

The estimated number of workers and types of equipment required to construct the proposed transmission line is shown in Table 4-1. Various phases of construction will occur at different locations throughout the construction process, and in some cases at the same time at different locations. Regular field meetings will be held with the CIC and environmental monitors, to coordinate construction activities with monitoring requirements for the transmission line and ancillary facilities.

<b>Table 4-1. PV Hub to Sun Valley 500kV Transmission Line Construction Estimated Personnel and Equipment<sup>1</sup></b>			
<b>Activity</b>	<b>People</b>	<b>Quantity and Type of Equipment</b>	
Survey Crew	3	2	pickup trucks
Right-of-Way Preparation/ Road Construction Crew	8	2	bulldozers (D-6 or D-8)
		1	motor grader
		2	pickup trucks
		1	water Truck (for construction and maintenance)
Footing Installation Crew	14	2	hole diggers
		1	bulldozer
		1	flatbed trucks
		4	concrete trucks
		2	dump trucks
		3	pickup trucks
		1	carry all
		1	hydraulic cranes
		2	wagon drills
		1	backhoe
Structure Steel Haul Crew	10	1	water truck
		2	steel haul trucks
		2	pickup trucks
		2	yard and field cranes
		2	fork lifts
Structure Assembly and Erection Crews	10	1	water truck
		2	pickup trucks
		1	carry all
		2	yard and field cranes
		2	trucks (2 ton)
Wire Installation Crew	25	1	water truck
		1	helicopter and fly ropes
		6	wire reel trailers
		2	diesel tractors
		1	crane (20 ton)
		4	trucks (5 ton)
		6	pickup trucks

Table 4-1. PV Hub to Sun Valley 500kV Transmission Line Construction Estimated Personnel and Equipment <sup>1</sup>			
Activity	People	Quantity and Type of Equipment	
		2	splicing trucks
		4	3-drum pullers (2 medium, 2 heavy)
		1	single drum puller (large)
		2	double bull-wheel tensioner (1 light and 1 heavy)
		1	two-man lifts
		1	sagging equipment (D-8 Cat)
		2	static wire reel trailers
		1	water truck
Cleanup Crew	4	3	dump trucks/material trucks
		1	pickup trucks
		1	water truck
		1	D-6 Cat
Road Rehabilitation Crew (Right-of-Way Restoration)	4	1	bulldozer
		1	motor grader
		1	water truck
		2	pickup trucks
Estimated maximum personnel required for all tasks including maintenance, management, and quality control personnel = 75			

### 4.3 ENVIRONMENTAL AND SAFETY TRAINING

Prior to gaining access to the right-of-way, all construction and maintenance workers will be required to participate in an environmental education program that will be developed by the Proponent prior to the start of construction and submitted to the BLM for review and approval prior to implementation. Safety and Environmental Resource Protection will be significant themes communicated, reiterated, and compliance monitored frequently and at regular intervals throughout the construction period. Safety Training will cover all aspects of safe construction practices and conduct, as well as ensuring that all personnel are informed of the procedures to be followed in the case of an emergency. At a minimum, the program will include the following topics: biological, cultural, paleontological, and other environmental requirements and protection measures. Training will be provided specifically for protection of both natural and cultural resources along the ROW as well as within access corridors and ancillary work areas (e.g., material yards, fly yards, pulling sites).

It is the responsibility of the construction contractor to ensure that all construction personnel have received the required training. Upon completion of training, workers will receive a card and hardhat sticker indicating they are cleared for access to the right-of-way. The construction contractor will provide the CIC with an updated list of those workers who have received the training. A noncompliance violation will be issued if a worker is found working on the right-of-way without the required environmental training.

In addition, the construction contractor will be responsible for providing safety training as required. Specific health and safety information for this POD is contained within Appendix A –

Construction Considerations, including a description of the safety requirements specifically associated with construction activities (construction of access roads, blasting, fire protection, etc.) All construction, operation, and maintenance activities will be required to comply with Occupational Safety and Health Administration regulations. The CIC will be notified by the construction contractor of any accidents that occur on public land during construction of the project. Notification procedures for emergencies are described in Appendix A8 – Emergency Preparedness and Response Plan Guidelines.

#### **4.4 DEVIATIONS DURING CONSTRUCTION**

It is understood by the BLM and the Proponent that unforeseen circumstances will occur during construction. The need for realignments to the proposed route, access roads, and/or work areas that are not within the permitted project right-of-way grant and EIS analysis may arise. In addition, the need to make changes to construction procedures, schedule, and/or approved mitigation measures and other specific stipulations and methods may be required. Under these or similar circumstances, a variance will need to be filed and approved by the BLM in order to stay in compliance. A detailed discussion of project variances and the process in which they are evaluated and approved or denied is provided in Appendix A9 – Environmental Compliance Management Plan..

#### **4.5 PROJECT CONSTRUCTION CLOSEOUT**

Upon completion of construction activities for the project (including site cleanup and initial restoration activities), the Proponent and the construction contractor will coordinate with the CIC and BLM Authorized Officer to conduct final on-the-ground inspections of project conditions. Inspections will be conducted to ensure work was completed in accordance with the terms and conditions of the right-of-way grant, CEC, POD, and any other applicable permits. When the BLM Authorized Officer determines that construction (including initial restoration activities) has been completed in compliance with these permits, the CIC, construction contractor, and Proponent's construction roles will be considered complete.

After the BLM's determination of successful construction completion, the CIC will submit a final summary report to the BLM Authorized Officer documenting the construction process and activities including, but not limited to, the following items:

- amount of actual temporary and permanent project disturbance (acres) as compared with the POD
- compilation of all weekly summary compliance reports (including digital pictures)
- variance requests and corresponding CIC/BLM decisions
- temporary work suspensions and work stoppage orders for violation of environmental compliance terms, and documentation of resolution

Appendix A9 – Environmental Compliance Management Plan describes the project closeout process, including the final summary report and construction closeout meetings, in greater detail.

## **SECTION 5 – OPERATION AND MAINTENANCE OF PROJECT**

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Section 5 describes the on-going and long-term activities that will occur along the right-of-way. It includes a discussion on compatible uses, right-of-way safety requirements, inspection and maintenance, long-term access, signage, and contingency planning.

### **5.1 INTRODUCTION**

The NESC (ANSI C2), which governs the design and operation of high-voltage electric utility systems, obligates the Proponent to maintain reliable operation of the electrical system. The design, operation, and maintenance of the project will meet or exceed applicable criteria and requirements outlined by the NESC, Federal Energy Regulatory Commission (FERC), Western Electric Coordinating Council (WECC), and U.S. Department of Labor Occupational Safety and Health Administration for the safety and protection of landowners, their property, and the general public.

Congress passed the Energy Policy Act of 2005, which provided a regulatory basis for the implementation of specific incentives for maintaining reliable service, or penalties for failure to do so. As a result of the passage of this Act, the FERC selected the North American Electric Reliability Corporation (NERC) to act as the enforcement agency for compliance with electric utility reliability and operating standards, among other issues. The Proponent is required to be in compliance with the various reliability standards promulgated through the implementation of NERC policies and procedures. In addition, the Proponent is governed by the WECC standards that may be in addition to or more stringent than those currently required by the NERC.

### **5.2 COMPATIBLE USES**

After construction, compatible uses in the right-of-way on public land will be considered and approved (if necessary) by the BLM, in consultation with the Proponent. Examples of compatible uses within the right-of-way include grazing, vehicle and pedestrian access, recreational use, low-growing vegetation, and pre-existing compatible uses. Examples of uses generally not compatible with high-voltage transmission lines include buildings or closed structures frequented by humans (such as residences), and any use that requires changes in surface elevation that affect electrical clearances of existing or planned facilities. Compatible uses of the right-of-way on public lands will have to be approved by the appropriate agency, and compatible uses within easements on private land crossed by the transmission line will be similar to those on the public land and subject to the discretion of the Proponent.

### **5.3 RIGHT-OF-WAY SAFETY REQUIREMENTS**

The Proponent will limit the height of vegetation along the right-of-way according to minimum conductor clearances required for the Project (see Section 5.4.2, Vegetation Management, and Appendix B – Vegetation Management Guidelines). Where vegetation presents a potential hazard, trees will be trimmed or cut to prevent accidental grounding contact with conductors. The transmission line will be protected with power circuit breakers and line relay protection

equipment. If a conductor failure occurs, power will be automatically removed from the line. Lightning protection will be provided by shield wires and OPGW on top of the structures.

### **5.3.1 Building and Fence Grounding**

In order to mitigate possible electric shock caused by electrostatic and electromagnetic induction, all buildings, fences, and other structures with metal surfaces located within 150 feet of the centerline of the right-of-way will be grounded to the mutual satisfaction of the parties involved. Typically, residential buildings located more than 150 feet from the centerline will not require grounding. Other buildings or structures beyond 150 feet of the centerline will be reviewed in accordance with the NESC to determine grounding requirements. All metal irrigation systems and fences that parallel the transmission line for distances of 500 feet or more, within 150 feet of the centerline, will be grounded (none identified at this time). All fences that cross under the transmission line will also need to be grounded. This procedure will be included in the construction specifications, and if grounding is required outside the right-of-way, temporary-use permits or landowner consent will be obtained, as necessary.

## **5.4 PROJECT INSPECTIONS AND MAINTENANCE**

Regular inspection of transmission lines, substations, switchyards, and support systems is critical for the safe, efficient, and economical operation of the project. This section provides information describing operation and maintenance activities that include transmission line patrols, annual inspections, tower and wire maintenance, and repair of access roads.

### **5.4.1 Transmission Line Maintenance**

Following construction, the transmission lines are typically inspected annually, or as required, by using fixed-wing aircraft, helicopters, ground vehicles (4x4 trucks or 4x4 all-terrain vehicles [ATV]), or on foot in accordance with APS' established policies and procedures for transmission line inspection and maintenance. The transmission lines will be inspected for corrosion, equipment misalignment, loose fittings, vandalism, and other mechanical problems. The need for vegetation management also will be determined during inspection patrols.

Detailed ground inspections will take place on an as-needed basis. The inspector will assess the condition of the transmission line and hardware to determine if any components need to be repaired or replaced, or if other conditions exist that require maintenance or modification activities. The inspector will also note any unauthorized encroachments and trash dumping on the right-of-way that could constitute a safety hazard. Typically, the inspector will access locations along the line and use binoculars and spotting scopes to perform this inspection.

Maintenance will be performed as needed, and the comfort and safety of land users and local residents will be provided for by limiting noise, dust, and the danger caused by maintenance vehicle traffic. Where access is required for non-emergency maintenance and repairs, the same precautions against ground disturbance that were taken during the original construction will be followed, and restrictions and mitigation measures applicable during initial construction will be

followed in areas of biological concern. Any berms or boulders that were in place also will be restored, after completion of the maintenance work.

Routine maintenance activities are tasks that have historically been performed regularly. The work performed typically consists of repair or replacement of individual components and does not typically include new ground disturbance activities. Routine maintenance is performed by relatively small crews using a minimum of equipment, over a short period of time (a few hours up to a few days). Equipment required for this work may include 4-wheel drive trucks, flatbed trucks, bucket trucks, boom trucks (high reach), or man lifts. This work is scheduled and is typically required due to issues found during inspections. Typical items that may require periodic replacement on a 500kV tower include insulators, hardware, or pole members.

Maintenance on 500kV systems typically use live line maintenance techniques, avoiding interruption of service to critical transmission line infrastructure. High reach bucket trucks, along with other equipment, are used to conduct these activities.

In the event of an emergency, crews will be dispatched quickly to repair or replace any damaged equipment. Every attempt will be made to contact the appropriate agencies or landowners along the right-of-way. If notification cannot be made, repair operations will proceed only in the case of an emergency situation. Repair of the line will have priority under emergency conditions, and reasonable efforts will be made to protect plants, wildlife, and other resources. Reclamation procedures following completion of repair work will be similar to those prescribed during construction.

Damage repair may require the same types of equipment used during construction, including power augers for hole boring, backhoes for excavation, and/or concrete trucks and cranes for structure erection. Other required equipment may include power tensioners, pullers, wire trailers, crawler tractors, and trucks and pickups for hauling materials, tools, and men. Under certain conditions, a helicopter could be used to haul in material and erect structures or string conductor in those areas where access and/or terrain conditions preclude the use of conventional methods. Any necessary temporary staging areas outside of the right-of-way would require authorization from the applicable landowner(s). Site and access road disturbances such as ruts created during damage operations will be restored to satisfactory condition using rehabilitation procedures.

If during transmission line maintenance and monitoring it is determined that new or reconstruction activities should be implemented, the Proponent will notify the BLM, property owners, and/or other regulatory agencies, and obtain proper approvals, as necessary.

Dust control, during maintenance of the transmission line, will be managed the same as during construction. Refer to dust control measures located in Appendix A6 – Erosion, Dust Control, and Air Quality Plan. .

#### **5.4.2 Vegetation Management**

Maintenance crews will trim trees and vegetation, where necessary, to prevent accidental grounding contact with conductors. In most areas, accepted standard utility practices such as repeated tree trimming and brush removal will be followed to maintain the right-of-way.

Generally, trees more than 15 feet in height and within 100 feet of the transmission centerline may need to be selectively removed or trimmed to provide the required electrical line clearance. The Proponent will comply with agency requirements regarding management of noxious weeds within the right-of-way, along access roads, and at temporary use areas (e.g., cleaning equipment to prevent spread of noxious weeds). Chemical treatment within or adjacent to the right-of-way generally will be limited only to areas with noxious weeds, and only if absolutely necessary. Should the use of herbicides or pesticides be necessary, only U.S. Department of Agriculture-recommended and Environmental Protection Agency-approved products will be used, and only upon prior approval of the BLM Authorized Officer or owner. Appendix B – Vegetation Management Guidelines provides further detail on how vegetation will be managed within and adjacent to the right-of-way during the operation and maintenance phase of the project.

#### **5.4.3 Substation/Switchyard Maintenance**

The 500kV switchyard and all equipment will be patrolled and monitored by maintenance personnel on a routine basis. If a large volume of a contaminate were to leak from a piece of electrical equipment, an alarm or a failure will occur that notifies the operations center of the problem, and a trained maintenance crew will be dispatched to the substation immediately to begin repairs and cleanup.

### **5.5 LONG-TERM ACCESS TO AND ALONG THE RIGHT-OF-WAY**

Authorized access roads will only be used for maintenance purposes upon completion of construction. Where long-term access is required for maintenance and operation, the Proponent shall maintain the right-of-way in a safe, useable condition. A regular maintenance program may include, but is not limited to, blading, ditching, culvert installation, and surfacing.

### **5.6 SIGNAGE AND MARKERS**

Warning signs will be placed on structures and at substations, marking high-voltage danger areas per industry standards. At this time, no specific locations have been identified for aerial line markers.

### **5.7 RADIO OR TELEVISION INTERFERENCE**

The Proponent will respond to complaints of radio or television interference generated by the transmission line by investigating complaints and implementing appropriate mitigation measures, if necessary. The transmission line will be patrolled on a regular basis so that damaged insulators or other components, which could cause interference, are repaired or replaced.

### **5.8 CONTINGENCY PLANNING**

A representative will be selected by the Proponent to provide routine and emergency planning for situations such as power outages, equipment upgrades, and fire control. The designated representative will have the authority to receive and carry out instructions from the BLM.

## **5.9 EMERGENCY PROCEDURES**

Emergency response procedures will be implemented for the following potential events, or similar events:

- downed transmission lines, structures, or equipment failure
- fires
- sudden loss of power
- natural disasters
- serious personal injury

## **5.10 TERMINATION AND RESTORATION**

The term of the BLM right-of-way grant to allow use of federal lands would be limited to 30 years, although the useful life of the project facilities is projected to be at least 30 years and up to 75 years. Should the right-of-way and facilities no longer be needed, the transmission lines and associated facilities would be decommissioned. Subsequently, conductors, insulators, concrete pads, and hardware would be dismantled and removed from the right-of-way. Transmission structures would be removed and foundations broken off at least 2 feet below ground surface. All areas of permanent disturbance would be restored in accordance with a Termination and Reclamation Plan to be developed by the right-of-way grant holder. The BLM will have the choice when the project is decommissioned as to whether the project access roads are to be removed. If the roads are left in place, maintenance of the roads will become the responsibility of the BLM.

One year prior to termination of the right-of-way, the holder shall contact the appointed BLM authorized officer to arrange a joint inspection of the right-of-way. This inspection will be held in order to agree to an acceptable termination and rehabilitation plan. The BLM Authorized Officer must approve the plan in writing prior to commencement of any termination activities. The termination and restoration plan will include the following information:

- what facilities and access routes are to be removed, restored, and/or rehabilitated
- how facilities and access routes will be removed, and the disturbed areas restored
- the time of year the facilities and access routes will be removed
- stabilization and reclamation techniques to be used during restoration



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## SECTION 6 – MITIGATION OF ENVIRONMENTAL CONCERNS

This section of the POD provides an overview of key environmental concerns associated with the construction, operation, and maintenance of the project, and presents mitigation measures to address those concerns.

### 6.1 OVERVIEW OF ENVIRONMENTAL CONCERNS AND MITIGATION

In order to meet agency management objectives and best management practices, mitigation measures have been developed for the project and are included as conditions in the CEC and right-of-way grant.

Table 6-1 provides a list of the standard operating procedures and mitigation measures identified to reduce impacts to environmental resources. These measures have been generally categorized as they apply to three specific phases of the project, including (1) Project Engineering and Design, (2) Project Construction, and (3) Maintenance and Operation of Facilities. The construction contractor will adhere to the measures identified during the engineering/design phase, as well as those measures identified herein to address construction and reclamation activities. The CIC will be responsible for the oversight of the implementation of these measures.

Table 6-1. Standard Operating Procedures and Mitigation Measures				
Mitigation Measure		Mitigation Application Phase		
		Engineering, Design, and Location	Construction	Operation and Maintenance
1	All construction vehicle movement outside of the right-of-way will be restricted to predesignated access, contractor acquired access, or public roads.	•	•	•
2	The limits of construction activities will typically be predetermined, with activity restricted to and confined within those limits. No paint or permanent discoloring agents will be applied to rocks or vegetation to indicate survey or construction activity limits. The right-of-way boundary will be flagged in environmentally sensitive areas described in the specific Plan of Development to alert construction personnel that those areas should be avoided.		•	•
3	In construction areas where recontouring is not required, vegetation will be left in place wherever possible, to avoid excessive root damage and allow for resprouting.		•	•
4	In construction areas (e.g., marshalling yards, structure sites, spur roads from existing access roads) where ground disturbance is significant or	•	•	

Table 6-1. Standard Operating Procedures and Mitigation Measures				
Mitigation Measure		Mitigation Application Phase		
		Engineering, Design, and Location	Construction	Operation and Maintenance
	where recontouring is required, surface restoration will occur as required by the landowner or land-management agency. The method of restoration will typically consist of returning disturbed areas to their natural contour (to the extent practical), reseeding or revegetating with native plants (if required), installing cross drains for erosion control, placing water bars in the road, and filling ditches. Seed must be tested and certified to contain no noxious weeds in the mix by the State of Arizona Agricultural Department. Seed viability must also be tested at a certified laboratory approved by the Authorized Officer.			
5	Watering facilities (e.g., tanks, developed springs, water lines, wells) will be repaired or replaced to their predisturbed conditions, as required by the landowner or land-management agency, if they are damaged or destroyed by construction activities.		•	•
6	Prior to construction, all construction personnel will be instructed on the protection of cultural, paleontological, and ecological resources. To assist in this effort, the construction contract will address (a) federal and state laws regarding antiquities, fossils, and plants and wildlife, including collection and removal; and (b) the importance of these resources and the purpose and necessity of protecting them.		•	
7	Impact avoidance and mitigation measures for cultural resources developed in consultation with the BLM and the SHPO will be implemented.		•	•
8	The project sponsors will respond to complaints of line-generated radio interference or television interference by investigating the complaints and implementing appropriate mitigation measures. The transmission line will be patrolled on a regular basis so that damaged insulators or other line materials that could cause interference are repaired or replaced.			•
9	The project sponsors will apply necessary mitigation to minimize problems of induced currents and voltages onto conductive objects sharing a right-of-way, to the mutual satisfaction		•	•

<b>Table 6-1. Standard Operating Procedures and Mitigation Measures</b>				
<b>Mitigation Measure</b>		<b>Mitigation Application Phase</b>		
		<b>Engineering, Design, and Location</b>	<b>Construction</b>	<b>Operation and Maintenance</b>
	of the parties involved.			
10	All construction and maintenance activities shall be conducted in a manner that will minimize disturbance to vegetation, drainage channels, and intermittent and perennial stream banks. In addition, all existing roads will be left in a condition equal to or better than their condition prior to the construction of the transmission line.		•	•
11	All requirements of those entities having jurisdiction over air quality matters will be adhered to and any necessary permits for construction activities will be obtained. Open burning of construction debris (cleared trees, etc.) will not be allowed on BLM administered land.		•	•
12	Fences and gates, if damaged or destroyed by construction activities, will be repaired or replaced to their original predisturbed condition, as required by the landowner or the land-management agency. Temporary gates will be installed only with the permission of the landowner or the land-management agency, and will be restored to their original predisturbed condition following construction.		•	•
13	The proposed hardware and conductor will limit the audible noise, and radio and television interference due to corona. Tension will be maintained on all insulator assemblies to ensure positive contact between insulators, thereby avoiding sparking. Caution will be exercised during construction to avoid scratching or nicking the conductor surface, which may provide points for corona to occur.			•
14	During operation of the transmission line, the right-of-way will be maintained free of construction-related nonbiodegradable debris.			•
15	Totally enclosed containment will be provided for all debris. All construction waste, including debris, litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials, will be removed to a disposal facility authorized to accept such materials.		•	•

<b>Table 6-1. Standard Operating Procedures and Mitigation Measures</b>				
<b>Mitigation Measure</b>		<b>Mitigation Application Phase</b>		
		<b>Engineering, Design, and Location</b>	<b>Construction</b>	<b>Operation and Maintenance</b>
16	Structures will be constructed to conform to "Suggested Practices for Raptor Protection on Power Lines" (Avian Power Line Interaction Committee 2006).	•		
17	Species protected by the Arizona Native Plant Law will be salvaged. A salvage plan, approved by the BLM, will be included in the specific Plan of Development. Generally, salvage may include: <ul style="list-style-type: none"> <li>• removal and stockpiling for replanting on site</li> <li>• removal and transplanting out of surface disturbance area</li> <li>• removal and salvage by private individuals</li> <li>• removal and salvage by commercial dealers</li> <li>• any combination of the above</li> </ul>	•	•	•
18	Arizona Game and Fish Department's Guidelines for Handling Sonoran Desert Tortoise's Encountered on Development Projects shall be adhered to for this project.		•	
19	All new access roads not required for maintenance will be permanently closed, using the most effective and least environmentally damaging methods appropriate to that area, with concurrence of the landowner or land manager (e.g., stock piling and replacing topsoil, or rock replacement). This would limit access into the area. Fencing, signing, and other closure methods will be determined by the BLM and paid for by the contractor or APS.	•	•	•
20	In designated areas, structures will be placed or rerouted so as to avoid sensitive features such as, but not limited to, riparian areas, watercourses, and cultural sites, or to allow conductors to clearly span the features, within limits of standard tower design.	•	•	
21	Transmission line structures will comply with Federal Aviation Administration Guidelines to minimize aircraft hazards (Federal Aviation 77).	•		
22	Special status species or other species of particular concern will continue to be considered	•	•	•

<b>Table 6-1. Standard Operating Procedures and Mitigation Measures</b>				
<b>Mitigation Measure</b>		<b>Mitigation Application Phase</b>		
		<b>Engineering, Design, and Location</b>	<b>Construction</b>	<b>Operation and Maintenance</b>
	during the construction phase of the project, in accordance with management policies set forth by the BLM and other appropriate land management agencies. This will entail monitoring for plant and wildlife species of concern along the proposed transmission line and associated facilities (i.e., access roads and staging areas). In cases where such species are identified, appropriate action will be taken to avoid adverse impacts on the species and its habitat.			
23	The contractor or APS will submit to the BLM a proposed road development plan for inclusion in the Plan of Development for the alignment between Burnt Mountain (Links 60/70) and Link 110. The goal of the plan is to limit new road construction to a minimum and discourage an east to west travel corridor.	•	•	
24	With respect to the project, APS shall participate in good faith in state and regional transmission study forums, and shall coordinate transmission expansion plans related to the project to resolve transmission constraints in a timely manner.			•
25	APS shall provide copies of the CEC to appropriate city and county planning agencies, SHPO, AZGFD, and ASLD.	•	•	•
26	APS shall work with developers along the route to encourage them to include the identity and location of the certified route in the developers' homeowners' disclosure statement.	•		
27	APS shall publish a copy of the CEC and attachments on the Applicant's project website within 10 days of approval of the ACC.	•		
28	Low profile designs will be used when feasible for all electrical equipment within the substation walls to minimize visibility and visual contrast when possible.	•		
29	All supervisory construction personnel will be instructed on key areas of potential concern identified by the BLM, approved mitigation measures, and established protocols regarding encounters with recreational users during construction.		•	

<b>Table 6-1. Standard Operating Procedures and Mitigation Measures</b>				
<b>Mitigation Measure</b>		<b>Mitigation Application Phase</b>		
		<b>Engineering, Design, and Location</b>	<b>Construction</b>	<b>Operation and Maintenance</b>
<b>30</b>	Conflicts with ongoing activities and any special events are avoided or minimized to the degree possible. Signs will be posted in the project area to notify users of the construction activities.		●	
<b>31</b>	All construction sites and access roads shall be clearly marked or flagged at the outer limits prior to the onset of any surface-disturbing activity. All construction personnel shall limit their activities within the marked or flagged areas.		●	
<b>32</b>	In areas determined to be critical by the BLM Authorized Officer, speed limit signs will be clearly posted, and these limits will be adhered to by all construction personnel.		●	
<b>33</b>	Matting will be used in rock blasting operations to minimize and control dust.		●	
<b>34</b>	At least 30 days prior to construction, the Proponent will assist the BLM with the notification of all livestock grazing permit holders affected by the construction of the transmission line. Information provided to each holder will include a general description of project facilities and construction activities, and the anticipated schedule for these activities.	●	●	
<b>35</b>	All supervisory construction personnel will be instructed on current livestock grazing practices and activities in areas potentially affected by construction. Included in this instruction will be policies regarding encounters with livestock or individuals moving or working with livestock, and the protocols and measures to address potential issues associated with grazing.		●	
<b>36</b>	In select areas, there would be no blading of new access roads in the area of construction and operation. Existing crossings would be utilized at perennial streams, National Recreational Trails, and irrigation channels. Off-road or cross-country access routes would be used for construction and maintenance. This would minimize ground disturbance impacts.		●	
<b>37</b>	Notification of blasting activities will be provided to nearby residents.		●	

<b>Table 6-1. Standard Operating Procedures and Mitigation Measures</b>				
<b>Mitigation Measure</b>		<b>Mitigation Application Phase</b>		
		<b>Engineering, Design, and Location</b>	<b>Construction</b>	<b>Operation and Maintenance</b>
<b>38</b>	Proper blasting techniques, including proper cover of charges, should be followed.		•	
<b>39</b>	In construction areas, as specified by the BLM, surface restoration will occur. The method of restoration will normally consist of returning disturbed areas back to their natural contour, reseeding, and the installation of erosion control measures (to the degree possible, and if required).		•	
<b>40</b>	To minimize disturbance to vegetation resources and reduce visual contrast in selective areas, clearing of trees and/or tall cacti in and adjacent to the right-of-way will be minimized to the extent practicable to satisfy conductor-clearance requirements (National Electrical Safety Code and 10 years of timber growth). Trees and other vegetation will be removed selectively to blend the edge of the right-of-way into adjacent vegetation patterns, as practicable and appropriate.	•	•	
<b>41</b>	Prior to construction, all supervisory construction personnel will be instructed on the protection of wild horses and the policies regarding encounters with wild horses. Appropriate signage that designates the potential presence of wild horses will be posted along major construction access roads, at intervals determined with the BLM Authorized Officer or designee.	•	•	
<b>42</b>	Damage that results from blasting will be repaired, or the owner will be fairly compensated.		•	
<b>43</b>	Prior to construction, a training program shall be instituted that would stress the importance of avoiding unintentional and intentional damage to cultural, paleontological, and ecological resources.		•	
<b>44</b>	One or more responsible persons will be designated to manage stormwater issues, conduct the required stormwater inspections, and maintain the appropriate records to document compliance with the terms of the NPDES permit.		•	
<b>45</b>	As-builts of the project shall be submitted to the authorizing officer within 30 days of project		•	•



Table 6-1. Standard Operating Procedures and Mitigation Measures				
Mitigation Measure		Mitigation Application Phase		
		Engineering, Design, and Location	Construction	Operation and Maintenance
	completion.			
46	<p>A Stormwater Pollution Prevention Plan will be written and kept onsite for the duration of construction. In accordance with the plan:</p> <ul style="list-style-type: none"> <li>• Areas with critical erosion conditions or that may require special construction activities will be identified and any additional industry standards to minimize soil erosion may be required.</li> <li>• Stormwater industry standards will be maintained on all disturbed lands during construction activities.</li> <li>• Approved sediment and erosion control industry standards will be installed and maintained until disturbed areas meet final stabilization criteria</li> <li>• Temporary industry standards will be used to control erosion and sediment at staging areas (equipment storage yards, fly yards, laydown areas) and substations</li> <li>• Upon completion of construction, permanent erosion and sediment industry standards will be installed along the transmission line within the right-of-way, at substations, and at related facilities</li> </ul>	•	•	
47	In areas of drought susceptible soils, the soil surfaces will be mulched and stabilized to minimize wind erosion and to conserve soil moisture		•	
48	Migration of construction-related sediment to all adjacent surface waterbodies will be prevented.		•	
49	The construction schedule may be modified to minimize construction activities in rainsoaked or muddy conditions. Existing roads and trails would be used for travel to the maximum extent feasible unless otherwise authorized. During wet road conditions, any ruts deeper than 5 inches remaining on the roads from the project would be repaired at the Authorized Officer's discretion.			
50	Construction holes left open overnight shall be covered. Covers shall be strong and secure enough to prevent wildlife or livestock from		•	

<b>Table 6-1. Standard Operating Procedures and Mitigation Measures</b>				
<b>Mitigation Measure</b>		<b>Mitigation Application Phase</b>		
		<b>Engineering, Design, and Location</b>	<b>Construction</b>	<b>Operation and Maintenance</b>
	falling into the hole.			
51	All vehicle undercarriages will be washed to prevent the spread of noxious weeds prior to entering the project site.		•	
52	All vehicles are to maintain current registration and will be maintained in good working condition, including emissions control devices		•	•
53	Vehicle refueling and servicing activities will be performed in designated construction zones located more than 100 feet from wetlands and streams		•	
54	The construction contractor must secure all construction related equipment and storage yards to prevent unauthorized use of equipment that could result in injury.		•	
55	The public and agencies will be informed regarding construction activity in the area.		•	•
56	Smoke only in approved areas. No smoking will be allowed while operating equipment or while walking or working in areas with vegetation. In areas where smoking is allowed, completely extinguish all burning tobacco and matches and discard them in ash trays, not on the ground.		•	•
57	Instruct all field personnel on emergency response for fire events.		•	
58	Clear away all flammable material for a minimum of 10 feet, including snags (fallen or standing dead trees) from areas of operation where a spark, fire, or flame could be generated.		•	•
59	If a fire does start, immediate steps will be taken to extinguish it (if it is safe to do so) using available fire suppression equipment and techniques taught at field crew emergency response training that will be provided by the construction contractor or the Proponent.		•	•
60	The Proponent or its contractors will notify the BLM of any fires and comply with all rules and regulations administered by the BLM concerning the use, prevention, and suppression of fires on federal lands, including any fire prevention orders in effect at the time of the permitted		•	

**Table 6-1. Standard Operating Procedures and Mitigation Measures**

Mitigation Measure	Mitigation Application Phase		
	Engineering, Design, and Location	Construction	Operation and Maintenance
<p>activity. The holder or its contractors would:</p> <ul style="list-style-type: none"> <li>• Operate all internal and external combustion engines (including off-highway vehicles, chainsaws, generators, heavy equipment, etc.) with a qualified spark arrestor.</li> <li>• Carry shovels, water, and fire extinguishers on all equipment and vehicles. Equipment will carry extinguishers ABC-rated 10-pound minimum, and vehicles will carry ABC-rated 2.5-pound minimum. If a fire spreads beyond the suppression capability of workers with these tools, all will stop fire suppression action and leave the area immediately via pre-identified escape routes.</li> <li>• Initiate fire suppression actions in the work area to prevent fire spreading to or on federally administered lands. If fire ignitions cannot be prevented or contained immediately, or it may be foreseeable to exceed the immediate capability of workers, the operation must be modified or discontinued.</li> <li>• Notify the appropriate agency or 911 immediately of the location and status of any escaped fire.</li> <li>• Prior to any operation involving potential sources of fire ignition from vehicles, equipment, or other means, review weather forecasts and potential fire danger. Prevention measures to be taken each workday will be included in the specific job briefing. Consideration for additional mitigation or discontinuing the operation must be given in periods of extreme wind and dryness.</li> <li>• Operate all vehicles on designated roads or park in areas where vegetation is less than 8 inches tall. Vehicles, including the undercarriages, will be cleared of vegetation accumulations and checked periodically to ensure no buildup of flammable vegetation.</li> <li>• Operate welding, grinding, or cutting</li> </ul>			

Table 6-1. Standard Operating Procedures and Mitigation Measures				
Mitigation Measure		Mitigation Application Phase		
		Engineering, Design, and Location	Construction	Operation and Maintenance
	activities in areas cleared of vegetation within range of the sparks for that particular action. A spark shield adequate for the sparks may be used to prevent sparks from carrying. A spotter equipped with a round-nose shovel and two ABC-rated 5-pound fire extinguishers and a 5-gallon backpack water pump is required to watch for ignitions during and 1 hour after the activity. Water may be used to wet down surrounding vegetation, but does not take the place of an adequately cleared area and spark shield.			
61	Avoid potential rockslide/landslide areas to the maximum extent possible and consult the blasting geologist before blasting in such areas.		•	
62	Design blasts to minimize ground vibrations that can cause slope instability and impact wells and springs.		•	
63	Limit hours of blasting to Monday through Saturday from 7:00 am to 7:00 pm, when blasting within 3,000 feet of sensitive receptors.		•	
64	Avoid blasting within 500 feet of wells/springs to the maximum extent possible.		•	
65	The Blasting Plan will identify blasting procedures, including safety, use, storage, and transportation of explosives that will be employed where blasting is needed, and will specify the locations of needed blasting.		•	
66	Appropriate flags, barricades, and warning signals will be used to ensure safety during blasting operations. Blast mats will be used when needed to prevent damage and injury from flyrock.		•	
67	Blasting in the vicinity of pipelines will be coordinated with the pipeline operator and will follow operator-specific procedures, as necessary.		•	
68	The blasting contractor will prepare site-specific blasting plans. In addition to standard specifications, the blasting plan for the proposed		•	

Table 6-1. Standard Operating Procedures and Mitigation Measures			
Mitigation Measure		Mitigation Application Phase	
		Engineering, Design, and Location	Construction Operation and Maintenance
	<p>Project will also stipulate the following:</p> <ul style="list-style-type: none"> <li>Explosives will not be stored on federal land without prior written permission from the land management agency. Copies of this permission will be posted on each magazine.</li> <li>Seventy-two-hour advance notice of blasting activities will be given to the land management agency, railroads, highway departments, and local communities; occupants of nearby residences, buildings, and businesses; and local farmers.</li> <li>Warning signs will be erected and maintained at all approaches to the blast areas and flaggers will be stationed on all roadways passing within 1,000 feet of blasting activities.</li> <li>Explosives will not be primed or fused until just before use.</li> <li>Blasting will take place during daylight hours only and will be monitored with three axis seismographs to ensure safe vibration levels are not exceeded.</li> <li>Vibration measured as peak particle velocity will not exceed 4 inches per second adjacent to an underground pipeline, and 2 inches per second for any aboveground structure</li> </ul>		

## 6.2 SPECIFIC ENVIRONMENTAL CONCERNS AND APPLICABLE MITIGATION MEASURES

This section of the POD briefly describes environmental resource concerns identified in previous studies, as well as through field investigations and surveys conducted for the project. This is followed by a general description of key mitigation measures that have been identified to address these specific resource concerns through the Engineering/Design, Construction, and Operation and Maintenance phases of the project. Additional information in support of this discussion is found in the appendices to this POD. Refer to Table 6-1 for details regarding standard operating procedures and mitigation measures as they relate to the tables for each resource below.

### 6.2.1 Land Use

Land use impacts include those that would displace, alter, or otherwise physically affect existing or planned land use. Since the transmission line is located primarily on state and BLM lands, these impacts are associated mainly with effects to recreational users, potential conflicts with special designated use areas, and disturbance to grazing allotments. Temporary impacts are expected to occur during construction as a result of activity within the right-of-way, and long-term impacts are primarily associated with the potential for increased access. Impacts to existing or planned land uses, recreation, mining activities, and other uses associated with construction of the transmission line and switchyard are anticipated to be minimal to none. Appendix D – Other Special Resource Considerations and Mitigation Measures provides additional information on land use concerns, including impacts to agriculture on private lands, and mitigation. Key mitigation measures designed to minimize impacts to land use include, but are not limited to, the following:

Applicable Mitigation Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Land Use	•	•		•	•					•		•							•	•			•			•		
Applicable Mitigation Measures	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
Land Use	•	•	•			•	•	•		•				•														
Applicable Mitigation Measures	57	58	59	60	61	62	63	64	65	66	67	68																
Land Use			•	•								•																

## 6.2.2 Air Quality

Construction of the transmission line and related facilities will cause a temporary increase in fugitive dust. Ambient levels of nitrogen oxides, hydrocarbons, and carbon monoxide near the construction zone also will be temporarily increased due to emissions from heavy construction equipment. Air quality control measures are intended to minimize fugitive dust and air emissions, and to maintain conditions as free from air pollution as possible. Emissions produced during grading and construction activities are of short-term duration and will cease upon completion of construction. Dust will be minimized by application of water to disturbed areas. Appendix A6 – Erosion, Dust Control, and Air Quality Plan addresses this in greater detail. Key mitigation measures designed to minimize impacts to air quality include, but are not limited to, the following:

Applicable Mitigation Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Air				•							•																	
Applicable Mitigation Measures	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
Air				•	•																			•			•	
Applicable Mitigation Measures	57	58	59	60	61	62	63	64	65	66	67	68																
Air		•	•																									

### 6.2.3 Noise

Some increased level of noise will result from the construction and maintenance of the transmission line. During construction, noise would be generated from equipment used for grading (e.g., access roads, staging areas, and tower sites), tower construction activities, helicopters, vehicle movement along the corridor, and blasting. Additionally, noise will be generated during post-construction rehabilitation. These noise levels will be temporary in nature and isolated to areas of construction. Some low levels of residual audible noise may result from the conductors, a phenomenon referred to as corona-generated noise. Appendix D – Other Special Resource Considerations and Mitigation Measures provides additional information on noise concerns and mitigation. Key mitigation measures designed to minimize noise impacts include, but are not limited to, the following:

Applicable Mitigation Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Noise								•	•				•															
Applicable Mitigation Measures	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
Noise					•				•																		•	
Applicable Mitigation Measures	57	58	59	60	61	62	63	64	65	66	67	68																
Noise							•		•	•		•																



#### 6.2.4 Earth Resources and Soils

The principal type of impact associated with earth resources is the potential for increased soil erosion. Some short-term soil compaction and stream sedimentation could also occur as a result of heavy construction equipment traveling along access roads. Impacts to earth and soil resources are anticipated to be minimal. Specific mitigation measures that address erosion are described in greater detail in Appendix A6 – Erosion, Dust Control, and Air Quality. Key mitigation measures designed to minimize impacts to soils include, but are not limited to, the following:

Applicable Mitigation Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Earth and Soils	•	•	•	•	•	•				•									•			•						
Applicable Mitigation Measures	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
Earth and Soils			•					•			•				•	•		•	•	•	•							
Applicable Mitigation Measures	57	58	59	60	61	62	63	64	65	66	67	68																
Earth and Soils					•	•		•				•																

### 6.2.5 Water Resources

No substantial impacts are anticipated for surface and groundwater resources, and the impacts (if any) associated with the Project will be covered under Nationwide Permit Number 12 (for jurisdictional waters). Water used for dust control, during construction of the transmission line, will be obtained from commercial sources to be identified by the construction contractor.

Construction activities in proximity to ephemeral washes and drainages may cause short-term impacts to stormwater runoff characteristics; however, no major diversions or long-term disturbance to drainages are expected as a result of the project. The release of hazardous materials, such as diesel fuel, gasoline, oil, hydraulic fluid, or other fluids and substances from vehicles and equipment, during construction could flow into nearby washes and drainages or infiltrate the soil. There is potential that this could degrade surface water quality in the event of stormwater run-off; however, impacts are expected to be minimal as no hazardous materials are allowed within 100 feet of washes or drainages, and all hazardous waste spills will be attended to immediately. Appendices A6 – Erosion, Dust Control, and Air Quality Plan; A7 – Hazardous Materials Management Plan; and Appendix E – Stormwater Pollution and Prevention Plan Methodology address water resource concerns and mitigation in greater detail. Key mitigation measures designed to minimize impacts to water resources include, but are not limited to, the following:

Applicable Mitigation Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Water				•	•	•														•								
Applicable Mitigation Measures	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
Water											•					•		•		•	•				•			
Applicable Mitigation Measures	57	58	59	60	61	62	63	64	65	66	67	68																
Water						•		•																				

### 6.2.6 Visual Resources

Visual impacts associated with the construction of the Project include the effects to the quality of scenic resources, as well as the views from sensitive land use and recreation areas or sites and from sensitive and scenic travel routes. Visual impacts that are expected to occur as a result of the project are based primarily on the introduction of new facilities and removal of vegetation in the landscape when visible from these sensitive locations. Through the selective location of facilities, the use of dulled-metal finish on all tower structures, and the use of nonspecular conductors, these impacts will be minimized. Appendix D – Other Special Resource Considerations and Mitigation Measures, provides additional information on visual resource concerns and mitigation. Key mitigation measures designed to minimize visual impacts include, but are not limited to, the following:

Applicable Mitigation Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Visual		•	•	•						•									•									•
Applicable Mitigation Measures	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
Visual								•			•	•																
Applicable Mitigation Measures	57	58	59	60	61	62	63	64	65	66	67	68																
Visual																												

### 6.2.7 Wastes, Hazardous or Solid

The contractor will comply with applicable laws pertaining to proper usage and disposal of potentially hazardous materials. Trash and solid waste, generated from construction activities, will be stored in closed containers and disposed of in accordance with regulatory requirements. Any spills will be immediately reported to the CIC and construction inspectors, so that cleanup can be implemented immediately. The construction contractor will notify the appropriate authorities (i.e., CIC and BLM) if a spill occurs. All spill materials will be labeled and stored at the contractors designated facility off the right-of-way for accumulation and disposal. Appendix A7 – Hazardous Materials Management Plan, addresses this in greater detail. Key mitigation measures designed to minimize impacts related to hazardous waste include, but are not limited to, the following:

Applicable Mitigation Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Wastes														•	•													
Applicable Mitigation Measures	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
Wastes																												
Applicable Mitigation Measures	57	58	59	60	61	62	63	64	65	66	67	68																
Wastes																												

### 6.2.8 Cultural Resources

Direct, adverse physical impacts could occur to cultural resources during construction, while indirect impacts could result after construction due to increased erosion or increased public access to sites along the transmission right-of-way. Adverse visual effects may occur to cultural sites with high aesthetic or interpretive values.

A cultural inventory has been conducted which documented cultural resources within the area of potential effect for the project. It may be possible to avoid all the National Register of Historic Places-eligible sites by spanning through careful positioning of the tower locations. If avoidance is possible, the project would have no effect to historic properties. If avoidance of those sites that are recommended as eligible for inclusion on the National Register of Historic Places is not possible, a treatment plan would be developed and implemented.

Key mitigation measures designed to minimize impacts to cultural resources include, but are not limited to, the following:

Applicable Mitigation Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Cultural	•	•		•		•	•													•					•			
Applicable Mitigation Measures	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
Cultural															•													
Applicable Mitigation Measures	57	58	59	60	61	62	63	64	65	66	67	68																
Cultural																												

### 6.2.9 Biological Resources

Potential impacts to biological resources include effects on threatened, endangered, or protected species, rare or unique vegetation types, migration corridors for wildlife, areas of low re-vegetation potential, or highly productive wildlife habitat. The impacts would generally be associated with the removal of vegetation and habitat caused by construction and operation activities, and from human activity and increased access into project areas. Following is a summary of the potential key concerns and the mitigation measures associated with biological resources, including wildlife and vegetation.

#### 6.2.9.1 Wildlife

Issues for wildlife species and important wildlife habitats are related primarily to increased public access into project areas and/or ground disturbance. Ground disturbance caused by construction of the transmission line may result in habitat loss and degradation; and increased public access into project areas during and following construction may result in increased injury, mortality, or other harm of certain species. Increased public access also may result in habitat damage from off-road vehicle use, accidentally set fires, and direct mortality of individual animals resulting from increased or higher speed vehicular traffic. In addition, the introduction and presence of the transmission towers in an area of low vegetation would increase the potential for long-term avian predation of sensitive wildlife species by providing roosting/hunting perches.

Mitigation has been developed to minimize the extent of potential impacts to wildlife in the project area. Through the selective location of facilities, modified tower design, seasonal timing of construction (if required), the limiting of ground disturbance, and the use of biological monitors, these effects will be reduced. Key mitigation measures designed to minimize impacts to wildlife include, but are not limited to, the following:

Applicable Mitigation Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Wildlife		•			•	•						•				•		•				•						
Applicable Mitigation Measures	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
Wildlife						•	•						•									•						
Applicable Mitigation Measures	57	58	59	60	61	62	63	64	65	66	67	68																
Wildlife																												

### 6.2.9.2 Vegetation

The management of protected plants present in the access roadways and work areas will be in accordance with CEC. Preconstruction surveys will be conducted to identify the locations of special status species habitats and plants, and these locations will be flagged and avoided during construction, to the fullest extent practicable. Mitigation measures that minimize and contain the level of disturbance will assist in minimizing impacts to vegetation, and areas of temporary disturbance will be reclaimed after completion of construction. Key mitigation measures designed to minimize impacts to vegetation include, but are not limited to, the following:

<b>Applicable Mitigation Measures</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>	<b>26</b>	<b>27</b>	<b>28</b>
Vegetation	•	•	•	•		•				•							•		•	•		•	•					
<b>Applicable Mitigation Measures</b>	<b>29</b>	<b>30</b>	<b>31</b>	<b>32</b>	<b>33</b>	<b>34</b>	<b>35</b>	<b>36</b>	<b>37</b>	<b>38</b>	<b>39</b>	<b>40</b>	<b>41</b>	<b>42</b>	<b>43</b>	<b>44</b>	<b>45</b>	<b>46</b>	<b>47</b>	<b>48</b>	<b>49</b>	<b>50</b>	<b>51</b>	<b>52</b>	<b>53</b>	<b>54</b>	<b>55</b>	<b>56</b>
Vegetation											•	•			•													
<b>Applicable Mitigation Measures</b>	<b>57</b>	<b>58</b>	<b>59</b>	<b>60</b>	<b>61</b>	<b>62</b>	<b>63</b>	<b>64</b>	<b>65</b>	<b>66</b>	<b>67</b>	<b>68</b>																
Vegetation																												

### 6.2.9.3 Noxious Weeds and Invasive Species

Noxious weeds and invasive species tend to spread readily, and they typically displace native plant species or bring about changes in species composition, community structure, and/or ecological function. The Arizona Department of Agriculture has identified a group of noxious weeds and invasive species that occur within the state. Surveys of the project area will identify noxious weeds and invasive species within the area. When noxious weeds are encountered within the construction area, mitigation measures will be instituted in consultation with the BLM botanist or as agreed to in a Noxious Weed Management Plan. Key mitigation measures designed to minimize effects of noxious weeds include, but are not limited to, the following:

Applicable Mitigation Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Noxious Weeds	•	•	•							•									•	•								
Applicable Mitigation Measures	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
Noxious Weeds																							•					
Applicable Mitigation Measures	57	58	59	60	61	62	63	64	65	66	67	68																
Noxious Weeds																												



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## **APPENDIX A: CONSTRUCTION CONSIDERATIONS**

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**APPENDIX A1: CONSTRUCTION PLAN  
AND PROGRAM**

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## **1. INTRODUCTION**

The following appendix describes the process anticipated for the construction of the Palo Verde Hub to Sun Valley Substation 500-kilovolt (kV) Transmission Project (project). Included are the considerations for coordination between applicable agencies and the construction contractor; preconstruction activities; construction workforce and schedule; general construction activities; and additional construction components.

### **1.1. Purpose**

The purpose of the Construction Plan and Program is to provide construction crews, the CIC, and environmental inspectors (see Appendix A9) with project-specific information concerning construction activities for the project.

## **2. CONTRACTOR AND AGENCY COORDINATION**

Following the award of the construction contract, a preconstruction kickoff meeting will be conducted to introduce the contractors and their field representatives; discuss schedules; review any construction stipulations (including those found in the CEC, right-of-way grant, POD, etc.); and identify each agency's point of contact and responsibilities as described in Section 2.1 of the POD. The CIC will preside over the meeting and review the key environmental issues associated with the project and the required mitigation measures that will be followed. In addition, all supervisory construction personnel will be instructed on the protection of biological, cultural, paleontological, and other resources, including their specific mitigation measures. The process for conducting worker environmental training will also be reviewed (see Section 4.3 of this POD for more detail on the environmental training program for project construction workers).

During construction, the CIC will monitor construction activities and ensure compliance with general and specific resource mitigation measures. If any modification to the approved project is required, the CIC will be notified and the process for addressing deviations during construction will be followed (see Section 4.4 and Appendix A9 – Section 4.2 of the POD).

Following completion of construction, the project will be mapped "As-Built" and the plans will be submitted to the BLM for review and comment. A project close-out meeting will be held once construction is complete (see Appendix A9).

## **3. PRECONSTRUCTION ACTIVITIES**

Following is a sequential description of the activities required prior to initiating construction of the major and ancillary facilities of the project.

### **3.1. Surveying and Staking the Transmission Centerline, Other Project Features, and Work Areas**

Ground survey and staking will be performed to locate structure centers, right-of-way boundaries, new access roads, spur roads to structure work areas, overland access, and temporary



work areas. Environmental monitoring activities will be in place during this phase. Specific flagging and staking procedures are described in detail in the Flagging, Fencing, and Signage Plan (see Appendix A2). Flagging will be maintained until final cleanup and/or reclamation is completed, after which they will be removed.

### **3.2. Preconstruction Resource Surveys**

Prior to construction, several surveys may be required to identify sensitive resources and determine potential mitigation. Investigations will include: (1) surveys for plants and wildlife species as specified by the appropriate land management agency and state or county authority as sensitive or of concern, in areas of known occurrence or habitat; (2) noxious weed surveys; and (3) Section 404 of the Clean Water Act field verification. Mitigation measures to address potential issues associated with the construction of the project relative to these resources are included in this POD.

Prior to construction of the project, additional surveys such as geotechnical investigations may be required in conjunction with final engineering, in order to evaluate geotechnical characteristics, and create necessary specific requirements for foundation construction. Any additional field studies required will be coordinated with the BLM, and the appropriate clearances will be obtained. Once complete, the results of final engineering will be incorporated into the POD, including construction details for grading, drainage, and specialized slope treatments, and the construction contractor will implement the plans. The CIC will inspect and certify that the slopes have been constructed and stabilized in accordance with the details in the POD.

### **3.3. Right-of-Way Preparation**

Right-of-way preparation includes general site preparation involving flagging of the right-of-way boundaries and construction areas (see Appendix A2). It also includes identification of plants to preserve in place, weed infested areas, and storage areas for windrowed plant and soil materials.

Preconstruction actions focus on protection of sensitive areas and resources identified in the environmental documents (Draft and Final Environmental Assessments, right-of-way grant, CEC, POD, etc.) prepared for the project. Project construction may begin after all right-of-way preparation actions have been completed for that area.

Right-of-way preparation actions identified for the project include flagging the limits of the right-of-way and construction areas, and flagging sensitive resource and/or avoidance areas (see Appendix A2)

### **3.4. Additional Preconstruction Activities**

Through coordination with the BLM and other agencies, as well as private landowners, the construction contractor will identify wells and springs in known blasting areas (if any) prior to construction.

#### **4. GENERAL TRANSMISSION LINE CONSTRUCTION ACTIVITIES**

Following is a sequential description of the activities associated with the construction of the major and ancillary facilities of the project. These activities include the following tasks, the schedule for which will be included in the Project Compliance Plan (see Section 2.1.3 of the POD).

- upgrading or construction of temporary and permanent access roads
- clearing and grading activities for the right-of-way, structure sites, staging areas, and batch plants
- excavating and installing foundations
- assembling and erecting structures with temporary and permanent pad sites
- stringing conductors and groundwires and fiber optic cable
- installing counterpoise (structure grounds) where needed
- cleanup and reclamation of affected areas

##### **4.1. Upgrading or Construction of Temporary and Permanent Access Roads**

Construction of the new 500kV transmission line will typically require vehicle, truck, and crane access to each new structure site for construction crews, materials, and equipment. Access roads must be sufficient to bear the weight and endure heavy construction vehicle use. The appropriate agencies and private landowners will be consulted before road construction begins. Roads will be upgraded or constructed in accordance with agency requirements (e.g., BLM requirements for road construction [BLM Manual 9113, 1985 and 2007]) and the applicable mitigation measures (see Appendix A3 – Transportation Management Plan). The general locations of proposed new and existing access roads are shown in the engineering drawings included as an attachment to the POD. New access and upgraded roads to be identified in the engineering drawings have been or will be surveyed for cultural and biological resources, and may be resurveyed immediately before construction to identify avoidance requirements for plants and wildlife, especially species designated by Section 7 of the Endangered Species Act or as specified by the appropriate land management agency and state or county authority as sensitive or of concern, in selected areas.

Where possible, existing paved and unpaved highways and roads will be used for the initial transportation of materials and equipment from the staging and storage areas to locations where they will be needed along the transmission line right-of-way. If necessary, existing roads will be upgraded, and all roads utilized will be left in a condition equal to or better than their condition prior to construction (see Appendix A3).

Where possible, existing access roads will be used and, as required, new spur roads to structure sites will be constructed and located to minimize impacts. The number of new spur roads will be held to a minimum, consistent with their intended use (e.g., structure construction or conductor stringing and tensioning). If existing access roads requiring improvement are identified for use, it will be assumed that most of these roads are approximately 10 feet wide (e.g., two-track roads) and could require up to 14 feet of additional improvement for equipment access (i.e., widening of existing access).

Where new roads are required to meet the access needs of the project, roads may be built as either temporary or permanent access. Where new roads are required for construction purposes

only, or to access temporary work areas (e.g., wire pulling and tensioning sites, concrete batch plants, etc.), access roads may be built for temporary use. Temporary roads serve the needs for project access during the construction phase, but are not anticipated to be necessary for operation, maintenance, or decommissioning purposes. Upon completion of construction activities, temporary access roads would be reclaimed and the access blocked as determined through mutual agreement by the Proponent (APS), other potential users, and the BLM. Where new roads are required for construction, operation, and maintenance purposes, access roads will be constructed for permanent use.

All access roads (new, improved, or spur), temporary or permanent, will typically be constructed with a travel-surface width of 20 feet, and 2-foot berms and/or drainage ditches on both sides of the travel surface, for a total roadway width of 24 feet. In steep terrain, total disturbance will likely exceed 24 feet, due to cut and fill conditions. In addition, roads may be routed around specific areas due to topographical constraints or to avoid sensitive resources. As-built drawings showing these and other necessary deviations will be submitted to the BLM upon completion of construction of the project. In some locations, helicopters may be used for construction (structure placement) in areas where there are environmental constraints, terrain restrictions, or where it is economically practical.

To reduce the severity of project disturbance where operation and maintenance access will be required, overland road construction methods (i.e., overland drive and crush; overland cut and clear) may be implemented where feasible. Overland drive and crush is defined as vehicular travel to the project right-of-way and/or facilities without significantly modifying the landscape; vegetation is crushed but not cropped, thereby minimizing disturbance to root mass and organics in the soil, and soil may be compacted but no surface soil is removed. Overland cut and clear is the removal of all vegetation to improve or provide suitable access for equipment. All vegetation is removed using above-ground cutting methods that leave the root mass intact. Soil is compacted but no surface soil is removed.

To the maximum extent possible, drainages will be crossed at grade (referred to as an Arizona crossing). Where Arizona crossings are not feasible, culverts would be constructed. Any culverts constructed within drainages will be temporary in nature and not exceed one tenth of an acre of disturbance within the wash channel. Any permanent disturbances over one tenth of an acre will require consultation and approval by the CIC, BLM, and U.S. Army Corp of Engineers, and special permits will be required.

During construction, dust control measures will be implemented on all roads as determined by the Authorized Officer. Methods to minimize dust and erosion control associated with existing and new access is presented in Appendix A6 – Erosion, Dust Control, and Air Quality Plan.

It is assumed that all existing and new permanent access may be used for operations and maintenance purposes, unless otherwise specified by the BLM. In certain areas, roads will be blocked or gates will be installed following completion of construction to restrict future general or public access, as required by the BLM.

#### **4.2. Clearing and Grading Activities for the Right-of-Way, Structure Sites, Staging Areas, and Batch Plants**

Clearing of natural vegetation will be required for construction purposes (access roads, structure sites, pulling and tensioning areas, and concrete batch plants/laydown areas), clearances for electrical safety, long-term maintenance, and reliability of the transmission line. Within or adjacent to the right-of-way, mature vegetation will be selectively removed under or near the conductors to provide adequate electrical clearance as required by the NESC. Trees that could fall onto the transmission line and affect the transmission line during wind-induced conductor swing, or otherwise present an immediate hazard to the transmission line, or have the potential to encroach within safe distance to the conductor as a result of bending, growing, swinging, or falling toward the conductor, will be removed. Where required in selective areas, planned removals and selective clearing plans will be submitted to the CIC for review and approval.

Individual structure sites will typically be cleared using a bulldozer, to blade the area required to provide a safe working space for placing equipment, vehicles, and materials for tower assembly and erection. Each structure will require a work area of approximately 200 feet by 200 feet (0.92 acre) for temporary construction laydown, tower assembly, and erection. See Table 3-1 in Section 3.1.1 – Typical Design Characteristics of the 500 kV Transmission Line, for more information.

Within the work areas described above, the permanent disturbance associated with the structure foundations for the 500kV structures will be up to 60 feet by 60 feet. The work area will be cleared of vegetation only to the extent necessary. After line construction, all work areas identified as temporary disturbance will be reclaimed.

Additional equipment may be required if solid rock is encountered at a structure location. Rock-hauling, hammering, or blasting may be required to remove the rock. Excess rock that is too large in size or volume to be spread at the sites will be hauled away and disposed of at approved landfills or at a location specified by the landowner. See Appendix A5 – Blasting Plan Methodology, for a more detailed discussion on blasting protocol, procedures, and requirements.

#### **4.3. Excavating and Installing Foundations**

Excavations for foundations will be made with power drilling equipment or excavators. Where soils permit, a vehicle-mounted power auger or backhoe will be used. In rocky areas, the foundation holes will be excavated by drilling or blasting methods, or installing special rock anchors. Foundation holes left open or unguarded will be covered to protect the public and wildlife. If practical, fencing may be used. All safeguards (e.g., blasting mats) associated with using explosives will be employed. Blasting activities will be coordinated with the appropriate agencies, particularly for purposes of safety and protection of sensitive areas and biological resources (see Appendix A5 – Blasting Plan Methodology). In extremely sandy areas, water or a BLM-approved gelling agent will be used to stabilize the soil before excavation. The required water will be procured from municipal sources and/or from landowners.

Lattice tower footings will be installed by placing reinforcing steel and a tower stub into the foundation hole, positioning the stub, and encasing it in concrete. Spoil material (excavated soil) will be used for fill where suitable, and the remainder will be spread at the structure site or along

graded access roads, or in locations previously agreed upon by the Proponent and the BLM. In areas where self-supporting tubular structures are being used, increased volumes of spoils (based on foundation size and depth) may require spreading of spoils beyond the general disturbance area, in order to maintain grades and runoff and to facilitate restoration. These locations will be mitigated on a case by case basis and tracked by the CIC. The foundation excavation and installation will require access to the site by power augers or drills, cranes, material trucks, and ready-mix concrete trucks. Foundation holes left open or unguarded will be covered to protect the public and wildlife; if practicable, fencing may be used.

#### **4.4. Assembling and Erecting Structures with Temporary and Permanent Pad Sites**

##### **4.4.1. Conventional Method of Assembly and Erection**

Structures and associated hardware, insulators, and stringing sheaves will be transported to each structure site by truck. The structure will be assembled on the ground and then lifted onto the foundations (Figure A1-1).

##### **4.4.2. Helicopter Method of Assembly and Erection (Optional)**

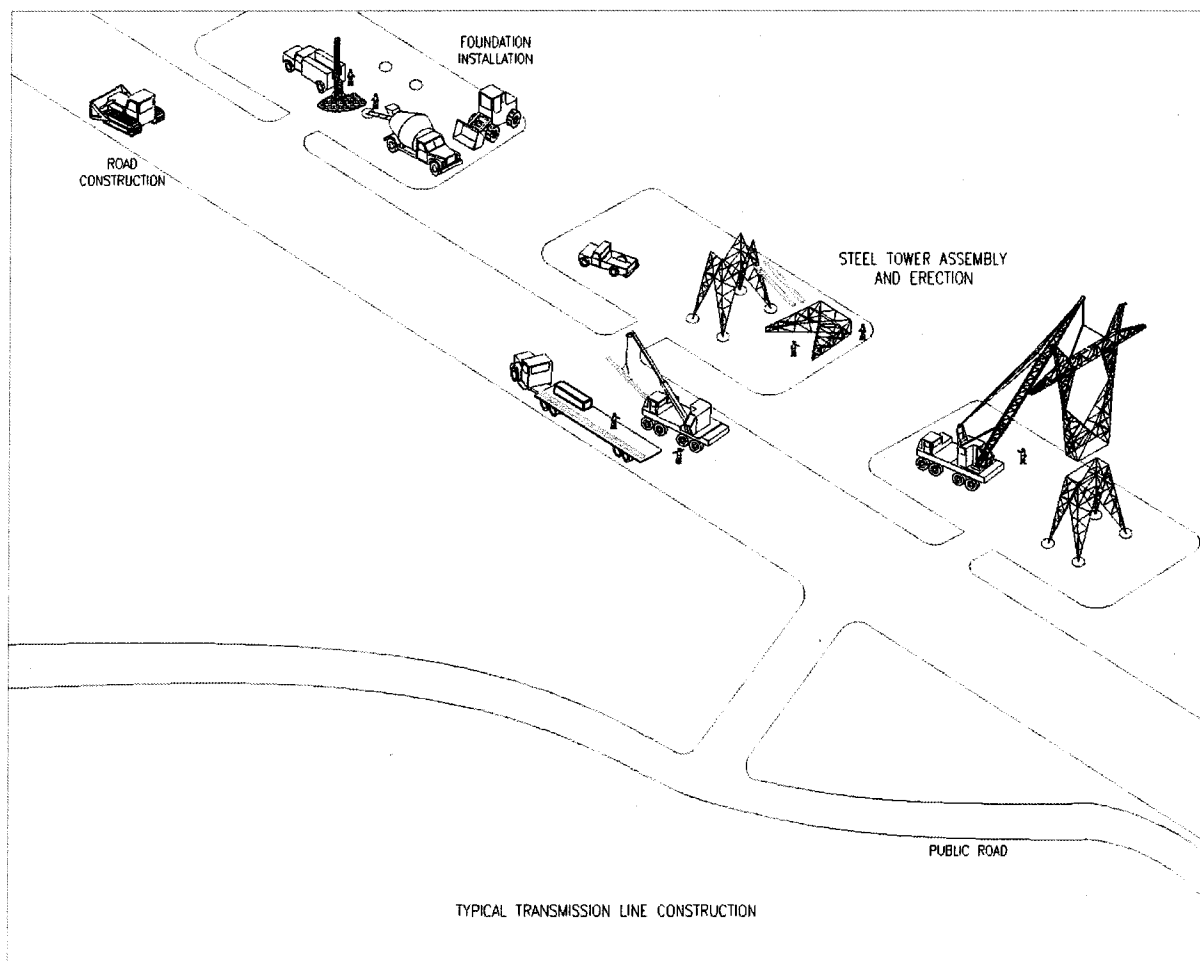
The Proponent may elect to use a helicopter method of erection in specific locations, where standard construction methods are not considered feasible due to terrain or other factors. The helicopter will be used to transport the structure, insulators, and hardware to the structure site. In addition, the helicopter may be used to erect the structure, instead of a crane (see Section 4.8.4 of this Appendix for additional details on the use and refueling of helicopters during construction).

#### **4.5. String Conductors, Groundwires, and Fiber Optic Cable**

Insulators, hardware, and stringing sheaves will be delivered to each structure site. The structures will be rigged with insulator strings and stringing sheaves at each groundwire and conductor position.

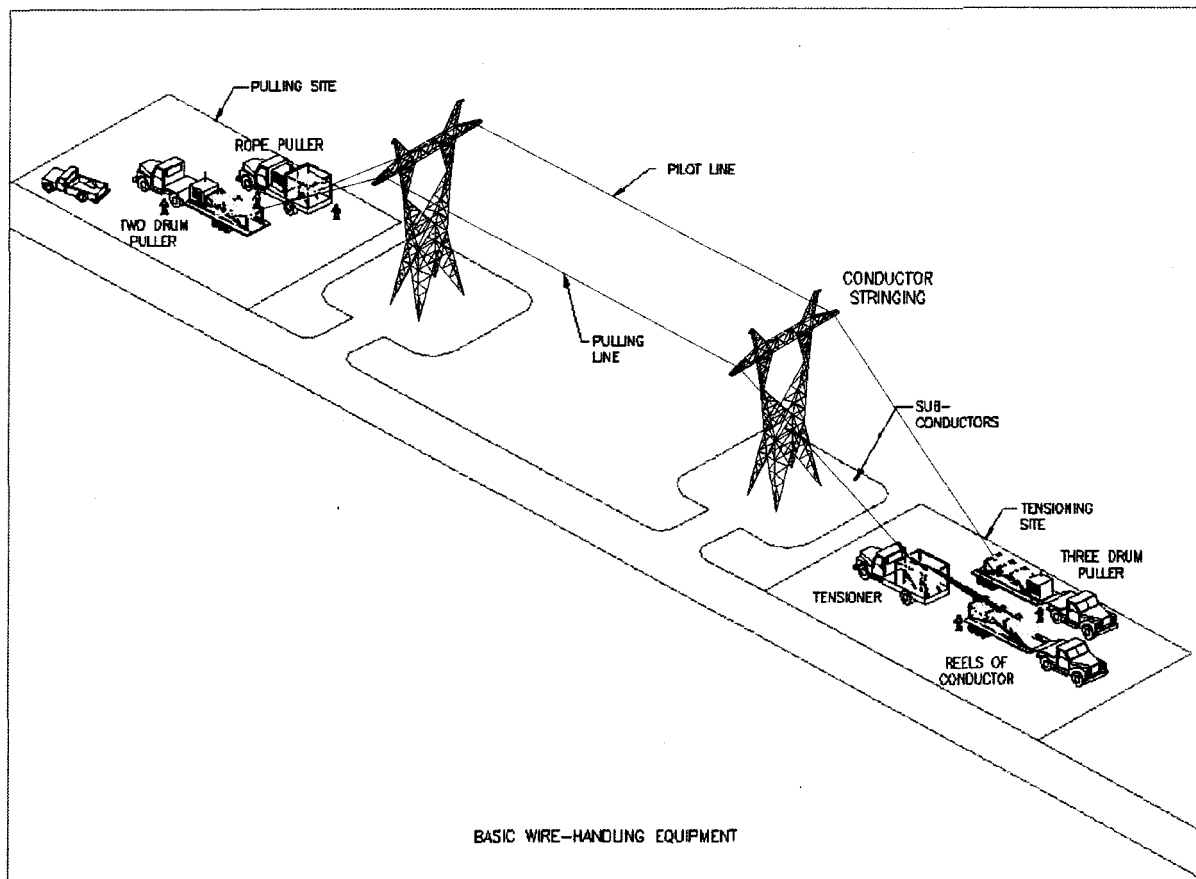
For protection of the public during wire installation, guard structures will be erected over highways, railroads, power lines, structures, and other barriers. Guard structures will typically consist of wood poles placed on either side of the barriers or by using boom trucks raising a guard cross-beam. These structures will prevent groundwires, conductors, or equipment from falling across obstacles. Equipment for erecting guard structures will include augers, backhoes, line trucks, boom trucks, pole trailers, and cranes. Guard structures may not be required for small roads; in such cases, safety measures such as barriers, flagmen, or other traffic control will be used. Following stringing and tensioning of all conductors, the guard structures will be removed and the area reclaimed.

Pilot lines will be pulled (strung) from structure to structure by either a helicopter or land-operated equipment, and threaded through the stringing sheaves at each structure. The pilot lines will be used to pull in a stronger, larger diameter line attached to conductors, which pull them onto structures. This process will be repeated until the groundwire or conductor is pulled through all sheaves.



**Figure A1-1. Foundation Installation, Structure Assembly, and Structure Erection**

Groundwires, fiber optic cable, and conductors will be strung using powered pulling equipment at one end and powered braking or tensioning equipment at the other end of a conductor segment. Sites for tensioning and pulling equipment will be approximately 2 to 4 miles apart, as identified in the engineering drawings attached to the POD. The tensioning and pulling sites will be an area approximately 200 feet by 400 to 600 feet, depending on the structure's purpose (e.g., mid-span or dead-end). Tensioners, pullers, line trucks, wire trailers, dozers, pickups, and tractors needed for stringing and anchoring the groundwire or conductor will be located at these sites. The tensioner, in concert with the puller, will maintain tension on the groundwire or conductor while they are fastened to the structures (Figure A1-2). Caution also will be exercised during construction to avoid scratching or nicking the conductor surface, which may provide points for corona to occur.



**Figure A1-2. Typical Transmission Line Conductor Stringing Activities**

#### **4.6. Installing Counterpoise (Structure Grounds) Where Needed**

Part of standard construction practices prior to conductor installation will involve measuring the resistance of the ground to electrical current near the structures. If the measurements indicate a high resistance, counterpoise will be installed, which will consist of trenching inground wire to a depth of 12 inches in noncultivated land and 18 inches in cultivated land, with a ground rod driven at the end. The counterpoise will be contained within the limits of the right-of-way, and may be altered or doubled back and forth to meet the requirements of the project. Typical equipment used for installing ground rods includes line trucks, backhoes, and trenchers.

#### **4.7. Cleanup and Reclamation of Affected Areas**

Construction sites, material storage yards, and access roads will be kept in an orderly condition throughout the construction period. Refuse and trash will be removed from the sites and disposed of in an approved manner (e.g., in an approved landfill). In remote areas, trash and refuse could be removed to a construction staging area and contained temporarily until such time as it could be hauled to an approved site. No open burning of construction trash would occur. Contaminants such as oils, hydraulic fluids, antifreeze, and fuels will not be dumped on the ground, and all spills will be cleaned up (see Appendix A7 – Hazardous Materials Management Plan).

The right-of-way will be restored as near to its original condition as practicable when construction is complete, as specified in the CEC approved for this project (June 2005). The method of reclamation will normally consist of, but is not limited to, returning disturbed areas back to their natural contour, reseeding, installing cross drains for erosion control (where feasible), placing water bars in the road, and filling ditches.

#### **4.8. Additional Construction Components**

The following are additional components for the construction of the project that will be used in conjunction with the general construction activities discussed previously.

##### **4.8.1. Construction Storage Yards and Concrete Batch Plants**

Previously disturbed BLM land and/or private property will be used to the maximum extent practicable for construction staging and personnel reporting. It is estimated there will be one or two material storage yards located on private property used during construction of this project, ranging in size from 15 to 20 acres each. These yards will be used throughout construction for receiving, storage, and transfer of required materials.

Concrete for use in the structure foundations will be dispensed from a portable concrete batch plant located at the construction storage yard(s). Equipment typically required at a batch plant site includes generators, concrete trucks, front end loaders, Bobcat loaders, dump trucks, transport trucks and trailers, water tanks, concrete storage tanks, scales, and job site trailers. Rubber-tired trucks and flatbed trailers will be used to assist in relocating the portable plant along the right-of-way, if necessary. Commercial ready-mix concrete may be used when access to structure construction sites is economically feasible. Concrete chips or slurry generated from the cleaning of concrete from equipment will be disposed of by hauling it to a project construction storage yard or an approved BLM dump site (see Appendix A7).

The construction yards and batch plants may also serve as field offices, reporting locations for workers, parking areas for vehicles and equipment, and locations for equipment maintenance. All required permits and approvals needed for additional construction storage yards and batch plants not previously identified will be obtained by the construction contractor.

##### **4.8.2. Equipment Staging**

Staging of equipment will be located at pulling and tensioning sites or work areas previously described. Equipment to be used on specific project activities at nearby locations will be temporarily laid out at these work areas.

##### **4.8.3. Equipment Refueling**

The contractor will implement standard refueling procedures for heavy equipment that is left on the right-of-way for long periods of time, such as cranes, blades, dozers, drill rigs, etc. This equipment will be refueled in place. As a rule, no personal or light duty vehicles will be allowed to refuel on the right-of-way. Procedures and precautions similar to those for helicopter refueling would be used (see Appendix A7 – Hazardous Materials Management Plan).



#### **4.8.4. Helicopter Use and Refueling**

A helicopter may be used to move personnel and equipment (e.g., pulling lines, assembling structures, etc.). Helicopters will set down in areas previously identified to receive temporary disturbance (e.g., pulling and tensioning sites, temporary work areas, construction yards, etc.). Travelers will be dropped on pulling and tensioning sites or other work areas previously described. Spill protection measures will be in place and all FAA regulations will be followed, and notification will be made to coordinate the air space with other possible helicopters or aircraft in the area (i.e., seeding operations, fire support, and Military Operation Areas).

If needed, additional temporary use sites within close proximity or on the right-of-way will be identified by the contractor and approved by the BLM for landing and refueling the helicopter. When and where required, prior to and during landing and refueling, a biological monitor will be dispatched to the site to clear sensitive species. Each fuel truck will be equipped with automatic shutoff valves and will carry spill kits; and in addition to the required preventive spill measures, a water truck may be required to spray the site to reduce dust. The CIC will also be dispatched to the fueling site when required. The contractor is responsible for cleanup of any materials released on the right-of-way. Any accidental spills will be handled according to the guidelines presented in Appendix A7 – Hazardous Materials Management Plan.

#### **4.9. Transmission Line Construction Work Force and Schedule**

It is anticipated that total construction time for the project will be up to 1 year. Work could occur up to 7 days per week and may include work during night hours, dependent upon construction scheduling, personnel availability, and local restrictions. The estimated number of workers and types of equipment required to construct the project per transmission line are shown in Table 4-1. The actual quantity and type of equipment employed will depend on the specific contractor selected for the project, but an estimated total of 75 workers could be required for the construction of each transmission line. Construction will occur in phases at different locations throughout the construction process, and in some cases at the same time at different locations. Regular field meetings will be held with the CIC and environmental monitors to coordinate construction activities with monitoring requirements.

### **5. GENERAL SWITCHYARD CONSTRUCTION**

There will be switchyard construction activities for the project at the Delany Switchyard. A summary of the switchyard location, footprint, and major equipment to be installed is included in Section 3.1.11 of this POD, and an anticipated layout for the proposed switchyard is shown in Section 3, Figure 3-7 of this POD. The following discussion is an overview of the types of construction activities that will take place at the substations.

#### **5.1. Access Roads**

Permanent, all weather access roads are required at the switchyard site to provide access for personnel, material deliveries, vehicles, trucks, heavy equipment, low-boy tractor trailer rigs (used for moving large transformers), and ongoing maintenance activities at the site. Switchyard

access roads are normally well compacted, graded gravel roads a minimum of 24 feet in width (a maximum of 28 feet with ditches on each side included).

### **5.2. Clearing and Grading**

All vegetation within the fenced switchyard area and up to approximately 10 feet beyond the fence will be required to be removed. This is required for personnel safety, due to grounding concerns and because of lower clearances to energized conductors within the switchyard as compared to transmission lines. These lower clearances are allowed by the NESC because the entire switchyard is fenced. An insulating layer on the surface of the switchyard is required to protect personnel from high currents and voltages during fault conditions. Typically, vegetation is removed and a 4- to 6-inch layer of crushed rock is applied to the finished surface of the switchyard, which is then usually treated with a soil sterilizer (i.e., herbicide) to prevent vegetation growth, because the vegetation will degrade the insulating qualities of the crushed rock. Only BLM-approved herbicides will be applied in accordance with the requirements of the CEC. The entire switchyard area will be graded essentially flat, with just enough slope to provide for runoff of precipitation; and will be graded to use existing drainage patterns to the extent possible. In some cases, drainage structures such as ditches, culverts, and sumps may be required. Clearing and grading material will be disposed of in compliance with local ordinances. Material from offsite will be obtained at existing borrow or commercial sites and will be trucked to the switchyard using existing roads and the switchyard access road.

### **5.3. Grounding**

A grounding system is required for the switchyard for detection of faults and for personnel safety. It typically consists of buried copper conductor arranged in a grid system and driven ground rods, typically 8 to 10 feet long. The ground rods and any equipment and structures are connected to the grounding conductor. The amount of conductor and length and number of ground rods required is calculated based on fault current and soil characteristics.

### **5.4. Fencing**

Security fencing is installed around the entire perimeter of the new switchyard to protect sensitive equipment and prevent accidental contact with energized conductors by third parties. This fence is anticipated to be 8 feet high, topped with barbed wire and will be constructed of chain link with steel posts. All fencing should also be coated in an environmental color, representative of the surrounding landscape, to reduce visual impacts. Locked gates are installed at appropriate locations for authorized vehicle and personnel access.

### **5.5. Foundation Installation**

Two types of foundations for supporting structures will be utilized for the project; spread footings or drilled piers. Spread footings are placed by excavating the foundation area, placing forms and reinforced-steel and anchor bolts, and pouring concrete into the forms. After the foundation has been poured, the forms will be removed, and the surface of the foundation dressed. Pier foundations are placed in a hole generally made by a track-mounted auger.

Reinforced-steel and anchor bolts are placed into the hole using a track-mounted crane. The portion of the foundation above ground will be formed. The portion below ground uses the undisturbed earth of the augured hole as the form. After the foundation has been poured, the forms will be removed, the excavation will be backfilled, and the surface of the foundation dressed. Equipment foundations for circuit breakers and transformers will be slab-on-grade type. These foundations are created by excavating the foundation area; placing forms, reinforced-steel, and anchor bolts (if required), and pouring concrete into the forms. After the foundations have been poured, the forms will be removed, and the surface of the foundation dressed. Where necessary, provisions will be made in the design of the foundations to mitigate potential problems due to frost. Reinforced-steel and anchor bolts will be transported to each site by truck, either as a prefabricated cage or loose pieces, which will then be fabricated into cages on the site. Concrete will be hauled to the site in concrete trucks; excavated material will be spread at the site or disposed of in accordance with local ordinances; and structures and equipment will be attached to the foundations by means of threaded anchor bolts embedded in the concrete. Some equipment such as transformers and reactors may not require anchor bolts.

#### **5.6. Oil Containment**

Some types of electrical equipment, such as transformers, and some types of reactors and circuit breakers are filled with an insulating mineral oil. Containment structures are required to prevent oil from this equipment from getting into the ground or water bodies in the event of a rupture or leak. These structures take many forms depending on site requirements, environmental conditions, and regulatory restrictions. The simplest type of oil containment is a pit of a calculated capacity, under the oil filled equipment that has an oil impervious liner. The pit is filled with rock to grade level. In the event of an oil leak or rupture, the oil captured in the containment pit is pumped into tanks or barrels and transported to a disposal facility. If required, more elaborate oil containment systems can be installed. This may take the form of an on-site or off-site storage tank and/or oil-water separator equipment, depending on site requirements.

#### **5.7. Structure and Equipment Erection/Installation**

Supporting steel structures are erected on concrete foundations as noted above. These are set with a track-mounted crane and attached to the foundation anchor bolts by means of a steel base plate. These structures will be used to support the energized conductors and certain types of equipment. This equipment is lifted onto the structure by means of a track-mounted crane and bolted to the structures; at which point electrical connections are made. Some equipment, such as transformers, reactors, and circuit breakers, are mounted directly to the foundations without supporting structures and set in place by means of a track-mounted crane. Some of this equipment requires assembly and testing on the pad; at which point electrical connections to the equipment are made.

#### **5.8. Control Building Erection**

One or more control buildings are required at the switchyard to house protective relays, control devices, battery banks for primary control power, and remote monitoring equipment. The size and construction of the building depends on individual switchyard requirements. Typically, the

control building will be constructed of concrete block. Once the control house is erected, equipment is mounted and wired inside.

#### **5.9. Conduit and Control Cable Installation**

Most switchyard equipment requires low-voltage connections to protect relaying and control circuits. These circuits allow metering, protective functions, and control (both remote and local) of the power system. Connections are made from the control building to the equipment through multi-conductor control cables installed in conduits and/or pre-cast concrete cable trench systems.

#### **5.10. Landscaping and Construction Cleanup**

The cleanup operation will be performed after construction activities are completed. All waste and scrap material will be removed from the site and deposited in local permitted landfills in accordance with local ordinances. Ruts and holes outside the substation fence due to construction activities will be filled and regraded. Revegetation and reclamation will be conducted as required. If landscaping is required by the BLM, landscaping will be completed with native, site-appropriate plant species preferably salvaged from the switchyard site during construction activities. Supplemental native and site-appropriate plants may be necessary for switchyard landscaping in some cases, as determined in coordination with the permitting agency. A permanent access road will be constructed to the new substation.

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**APPENDIX A2:    FLAGGING, FENCING,  
                         AND SIGNAGE PLAN**

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## 1. INTRODUCTION

This Flagging, Fencing, and Signage Plan describes the methods that will be used in the field to delineate project features and sensitive environmental resources areas and warnings during project construction. These methods are intended to ensure that ground disturbance is limited to previously approved areas and that project personnel stay on approved access routes and within approved work areas; and to establish project notifications (i.e., warning signs, speed limit, and sensitive areas). The measures described in this plan are an integral part of the environmental compliance program for avoiding and minimizing impacts to sensitive resources.

### 1.1. Purpose

The purpose of this plan is to provide information on the field markings (i.e., flagging, staking, fencing, and signage) that will be used to identify approved project work areas, as well as sensitive resource areas where construction is to be excluded. No federal, state, or local laws, rules, or regulations specifically address flagging and fencing protocols for construction projects. This plan serves as an informational guide on access restrictions and safety precautions to all individuals who will have access to the project right-of-way. It will help to avoid adverse impacts to the environment, human health and safety, and property that could potentially result from the activities associated with the construction of the project.

Several mitigation measures in the Project EA and CEC (see Section 6 of the POD) require adequate field marking of sensitive resource areas to avoid or reduce impacts. Flagging or fencing requirements are included within several mitigation measures to help minimize the amount of ground disturbance and protect vegetative cover and habitat, water quality, cultural resources, and special-status species, and to minimize the spread of invasive weeds.

## 2. DEMARCATING PROJECT FACILITIES

Standard survey flags and stakes will be installed before the start of project construction. Structure sites (e.g., tower locations, anchor points, reference points) will be marked by the construction contractor. Designated project access roads, spur roads, parking areas, and pullout areas will be marked to facilitate travel to and from the right-of-way. Wire stringing/pulling sites and material yards will be demarcated, as necessary, to indicate the limits of the approved work area. The construction contractor will stake the boundaries of the maximum area needed for work areas and will provide the dimensions to the CIC. If the delineated work areas exceed the approved dimensions for project facilities (see Table 3-1 and Section 3.3 of this POD), the construction contractor will coordinate with the CIC for approval, and consultation with the BLM and other agencies may be required.

Switchyard site locations and substation improvements will be delineated, and helicopter fly yards, wire stringing areas, and material yards will be demarcated to indicate the limits of the approved work area.

Table A2-1 provides standards that will be used for marking project features needed for construction and features to be avoided.

<b>Table A2-1. Flagging Plans</b>		
<b>Colors</b>	<b>Meaning</b>	<b>What to do</b>
Yellow/Green	Avoidance Area – sensitive plant resource, noxious weeds, and/or sensitive environment areas (cultural, etc.)	Avoid these items/areas; do not drive vehicles or equipment near flagged items or within flagged areas
Pink	Proposed structure locations	Do not disturb survey stakes
Pink/White	Structure offsets	Do not disturb survey stakes
Blue/White	Temporary work areas, including pulling and tensioning, guard structure, and helicopter refueling sites	Do not drive vehicles/equipment or conduct activities outside of temporary use areas, unless authorized to do so
	Construction access points and roads (including drive and crush routes)	Verify that right of entry has been obtained before flagging for use
Many Colors	Cadastral survey points	Protect in place

### 3. ENVIRONMENTAL EXCLUSION AREAS

Signs, flags, and/or fencing will be used to delineate and protect sensitive environmental resources in the vicinity of construction activities. No paint or permanent discoloring agents will be applied to rocks or vegetation to indicate limits of survey or construction activity. A system of standardized and simplified exclusion markings will be used to reduce potential confusion during construction, and to minimize the risk of highlighting types of sensitive resources that could be targeted by vandals (e.g., if exclusions around archaeological sites were marked differently than those around sensitive natural resource areas, the sites would be at a higher risk of unauthorized artifact collecting or other disturbance). Exclusion areas will be set up to protect these areas, but the specifics of the sensitive environmental resource (i.e., biological, cultural, or paleontological resources) will not be disclosed to the construction contractor.

#### 3.1. Flagging

Survey flagging (i.e., surveyor's ribbon tied to wooden stakes, metal posts, or vegetation) will typically be used to delineate the limits of work areas such as material yards, disturbance limits (i.e., boundaries of the right-of-way), wire stringing sites, access roads, etc., unless existing fencing or other features clearly indicate the limits of the area. Survey flagging may be used to demarcate sensitive resource locations situated a safe distance from planned construction activities, but generally will not be used to define resource exclusion areas close to planned construction activities, due to concerns about the visibility and stability of flagging during construction.

The BLM Authorized Officer or CIC, as needed, will determine whether flagging or fencing (as described below) is the appropriate protective device for a given location. Flagging color will conform to the requirements presented in Table A2-1.

### 3.2. Fencing

To delineate the limits of construction near sensitive resources that require a high level of protection from inadvertent project disturbance, a combination of one or more of the following fencing materials will be installed by the construction contractor(s):

- Rope (0.25-inch diameter in yellow or orange coloring)
- Plastic or fabric tape
- Safety fencing (plastic orange or red mesh at least 24 inches wide and at least 18 inches off the ground, to address travel by small animals)

Roping with periodic marking by exclusionary signs or lengths of tape is a highly visible and effective exclusion devise. Roping, tape, and safety fence will be installed using metal posts for increased durability. In most cases, it is anticipated that the materials will be installed at the margins of the sensitive resource (including any required buffers), rather than at the edge of the work area. If a buffer zone encroaches into the work area, only the portions that overlap with the work area will be delineated and signed as an exclusion zone.

### 3.3. Signage

Signs will be used to help identify project features, such as access roads and certain project facilities. Signs will be a minimum of 8.5 inches by 11 inches on laminated (7 mil or greater) white/color paper for protection from the elements. Signs will be installed on metal posts, wooden stakes, or attached to exclusion fencing/roping, as appropriate. Background colors will vary to enhance sign recognition from a distance. Table A2-2 provides some standards for marking project features that will be needed during construction. Signs for sensitive resource areas will be oriented for visibility from both directions of likely travel. Temporary warning signage will be employed to alert the public of blasting, as required (see Appendix A5 – Blasting Plan Methodology).

<b>Table A2-2. Sign Standards for Project Features</b>			
<b>Feature</b>	<b>Feature Color</b>	<b>Sign Text</b>	<b>Comments</b>
Speed limit signs	White	Speed Limit 20-25 MPH Strictly Enforced	To be located at various locations along the approved project access road.
Direction sign	White	Structure 95 Ahead On Line	To be located along the approved project access road and points of intersection, to provide direction to current structures being constructed.
Cultural sites, special-status wildlife areas, drainages, and invasive weed infestations adjacent to construction areas.	Yellow	Sensitive Resource Area Keep Out	Signs to be installed, as needed, in addition to exclusion fencing and flagging.

<b>Table A2-2. Sign Standards for Project Features</b>			
<b>Feature</b>	<b>Feature Color</b>	<b>Sign Text</b>	<b>Comments</b>
Areas temporarily closed to construction due to special-status wildlife breeding, nesting, or seasonal-use range.	Yellow	Sensitive Resource Area Keep Out	Signs to be installed, as needed, at logical points of entry (i.e., access road and/or centerline travel route) to excluded zone.
Invasive weed cleaning stations	Yellow	Weed Cleaning Station	Signs to be installed at logical points of entry.
Top soil stock piling	Yellow	Top Soil Do Not Disturb	Sign to be placed at the pile, clearly visible for work area.
Unapproved access road, closed roads	Yellow	Do Not Enter	To be located at juncture of approved access roads.
Blasting areas	Orange	Caution – Blasting Zone Ahead	Located at appropriate points to warn the public of blasting activities.
MPH – miles per hour			

#### **4. INSTALLATION, MONITORING, MAINTENANCE, AND REMOVAL OF FLAGGING, FENCING, AND SIGNAGE**

The success of this Flagging, Fencing, and Signage Plan hinges on the proper installation, monitoring, and maintenance of protective devices. The construction contractor or his designated surveying contractor will be responsible for the installation and maintenance of the field marking of construction features (e.g., towers, work area boundaries, anchors, substations). These markings will be installed in advance of construction activities in the area, maintained during the course of construction, as necessary, and removed during cleanup activities.

Environmental exclusions, signs, flags, and fencing for general inventory purposes and to denote exclusionary zones will be installed by flagging and fencing crew(s), along with the assistance of appropriate resource specialists (e.g., botanists, biologists, paleontologists, archaeologists) as necessary. These environmental exclusions will be installed prior to the start of construction within a work area. Resource specialists will be consulted if there is uncertainty as to the type or location of needed exclusion devices for botanical, wildlife, wetlands, springs, streams, or archaeological sites.

Routine monitoring by the CIC will include an ongoing assessment of the need for replacement or repair of exclusionary flagging or fencing. Maintenance needs related to exclusionary devices will either be corrected at the time of observation by the CIC or resource specialist, or will be documented as a future need. If maintenance of an exclusionary device is needed within an active construction area, corrective action will be taken within 1 workday. Maintenance of signs, flagging, and fencing within dormant areas will be implemented as necessary. Upon completion of construction activities, and following cleanup and/or reclamation, all staking and flagging will be removed and disposed of by the construction contractor.

**APPENDIX A3:   TRANSPORTATION  
MANAGEMENT PLAN**

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## **1. INTRODUCTION**

This Transportation Management Plan addresses regulatory compliance, traffic management practices, levels of right-of-way access and mitigation measures to help reduce impacts related to transportation and the construction of temporary and long-term access within the vicinity of the project.

### **1.1. Purpose**

The purpose of this plan is to provide the BLM and other public agencies, the CIC, and the construction contractor with a description of the type of access associated with the construction, operation, and maintenance of this project, and make evident the potential impacts that could be created by construction and operation of the project. The goal of this plan is to ensure that impacts from construction of the transmission line and any associated access are kept to a minimum through the use of management practices and mitigation measures described throughout this appendix. These practices and measures are intended to mitigate the effects of transportation on environmental resources, roads, traffic, travel, and road safety.

## **2. REGULATORY**

A number of agencies have jurisdiction over the transportation-related components of the project. These include the BLM; Arizona Department of Transportation (ADOT); local law enforcement and road departments in Maricopa County; and Arizona Highway Patrol. Encroachment permit applications will need to be filed with appropriate road agencies for those areas where the transmission line crosses public roads (e.g., I-10, etc.) prior to construction.

Other permits and approvals not directly related to transportation could affect the construction, use, and/or maintenance of roads in certain areas. Persons responsible for project transportation activities must be familiar with all relevant sections of this POD.

## **3. TRAFFIC MANAGEMENT PRACTICES**

Ground travel will be the primary means of transporting construction and maintenance crews and equipment during project construction; helicopters will be used as deemed necessary. All vehicles will obey jurisdictional traffic speed regulations and the posted speed limit. Speeds along access roads and spur roads within the right-of-way may be limited to 15 mph in some areas to prevent excessive amounts of construction related dust (see Appendix A5 – Erosion, Dust Control, and Air Quality Plan).

Before construction, authorized access routes will be clearly marked in the field with signs or flagging (see Appendix A2 – Flagging, Fencing, and Signage Plan). The construction contractor will review the location of proposed access and will be responsible for ensuring that construction travel is limited to designated areas that clearly identify the limits of disturbance.

All field personnel will attend an environmental training program. Through this program, field personnel will be instructed to use only approved access roads, drive within the delineated road

limits, and obey jurisdictional and posted speed limits to minimize potential impacts to biological, paleontological, and cultural resources.

Every effort will be made to minimize the effects of project construction activities on public transportation and to provide for public safety. The construction contractor, CIC, and all environmental monitors will maintain a communications network that consists of one or both of the following devices: two-way radios and/or cellular phones. This will allow for coordination of equipment traffic along existing access roads, such that public safety and traffic impacts are minimized.

In general, the number of construction vehicles needed for the project is not expected to substantially increase traffic volume. Similarly, road and lane closures are anticipated to be minimal, and will most likely occur during conductor stringing activities or during blasting. If road and lane closures are needed (e.g., to pull line across the I-10 or local roads) the appropriate regulatory agencies, affected parties, and emergency service providers will be notified in advance of the anticipated closure.

Although construction traffic is not expected to disrupt access to residences along the right-of-way, adjacent landowners will be notified of the construction schedule (where appropriate). Signs will be posted in the project area to notify landowners and others of the construction activity (see Appendix A2 – Flagging, Fencing, and Signage Plan). Construction crews will park only in designated areas and will be shuttled to the appropriate work sites, if necessary.

In addition to minimizing the impacts associated with ground travel, the construction contractor will coordinate construction activities with jurisdictional utilities and the FAA, as needed.

#### **4. TYPES OF RIGHT-OF-WAY ACCESS**

Access to the project transmission line right-of-way and other areas needed for construction (e.g., staging areas) will be needed for project construction, operation, and maintenance activities. Listed below are the five types of access that will be used for this transmission line.

- **Existing Paved Roads:** These roads are typically highways and state routes (e.g., I-10, etc.) that will be used for travel to existing and new dirt roads to access the right-of-way. No staking will be required for this type of access.
- **Existing Unpaved Roads Not Requiring Improvements:** These are existing dirt or gravel roads that generally will not require any improvements to support construction vehicles to access the right-of-way. Regular maintenance for construction (regarding wash-out areas, graveling, and installation of gravel pads for controlling trackout) is allowed in these areas. The outer edge of existing dirt access roads that have been approved for the project will be staked. If it is determined that these roads need improvement, the CIC must be notified in writing and the necessary environmental inspections (biological, cultural, paleontological) conducted before any improvements can be initiated (see POD Section 4.4 – Deviations During Construction, and Appendix A9 – Environmental Compliance Management Plan). Activities considered as improvements include road widening, road straightening, and installation of culverts or temporary bridges. It is important to note that some requests may require additional

review and approval periods (more than 30 days) if they involve other regulatory agencies.

- **Existing Unpaved Roads Requiring Improvements:** These are existing dirt or gravel roads that may require improvements to support construction vehicles to access the right-of-way, and may be widened to 20 feet, with 2-foot berms on either side (maximum 24 feet wide). Improvements to these existing roads may include mowing, blading, realignment, widening cut/fill, tree removal, and bridge/culvert construction. Improvements to these roads may require restoration to preconstruction condition as determined by the BLM Authorized Officer. Approved access roads that require improvement will be staked to a maximum width of 24 feet. In rough terrain conditions, improved roads may require increased grading for access along steep slopes (side-hill roads) and could likely exceed a 24-foot width, depending on the degree of slope and the amount of displaced soil.
- **New Access Roads:** These roads will be constructed where existing access is not sufficient to access the right-of-way and will be generally 20 feet wide with 2-foot berms on either side. In steep or rugged terrain, disturbance for new roads may be greater than the 20-foot-wide travel surface because of necessary cut and fill. Construction of these new access roads may include mowing, blading, tree removal, and bridge/culvert construction. These new roads will require restoration to preconstruction condition, if they are not identified for future operation and maintenance of the transmission line. Approved new access roads will be staked to a standard width of 24 feet. In rough terrain conditions, new roads may require increased grading for access along steep slopes (side-hill roads) and would likely exceed a 24-foot width, depending on the degree of slope and the amount of displaced soil.
- **Overland Access:** In areas where no grading will be needed to access work areas, the construction contractor will use overland access to the greatest extent possible. Overland access will consist of drive and crush and/or clear and cut travel. Drive and crush is vehicular travel to access a site without significantly modifying the landscape. Vegetation is crushed, but not cropped. Soil is compacted, but no surface soil is removed. Even though vegetation may be damaged or destroyed, this creates vertical mulch upon the surface soil and leaves the seed bank in place. Crushed vegetation will likely resprout after temporary use is stopped. Clear and cut is considered as the “brushing off” (removal) of all vegetation, in order to improve or provide suitable access for equipment. All vegetation is removed using above-ground cutting methods that leave the root crown intact. Soils are compacted, but no surface soil is removed. Prior to work beginning, overland access routes will be staked to a maximum width of 24 feet.

The Proponent has identified access that requires improvements inside and out of the right-of-way. If construction of additional access not identified on the maps included in the POD is needed, proper approvals will be acquired through the procedures outlined in the POD (see Section 4.4 – Deviations during Construction, and Appendix A9 – Environmental Compliance Management Plan).

## **5. TRANSPORTATION MITIGATION MEASURES**

This section describes practices intended to mitigate potential environmental, traffic, and traffic safety-related impacts associated with access to and from the transmission line.

### **5.1. Mitigation Measures**

Following are standard and selective mitigation measures to reduce potential impacts resulting from ground disturbance and the increased levels of public access associated with the construction and operation of the transmission line.

Standard mitigation measures are to be applied to all affected project areas to help reduce potential access-related impacts. Listed below are transportation-related standard mitigation measures that are to be implemented by the Contractor during construction of the project facilities:

- Mitigation Measure 1 – All construction vehicle movement outside of the right-of-way will be restricted to predesignated access, contractor acquired access, or public roads.
- Mitigation Measure 2 – The limits of construction activities will typically be predetermined, with activity restricted to and confined within those limits. No paint or permanent discoloring agents will be applied to rocks or vegetation to indicate survey or construction activity limits. The right-of-way boundary will be flagged in environmentally sensitive areas described in the specific POD to alert construction personnel that those areas should be avoided.
- Mitigation Measure 10 – All construction and maintenance activities shall be conducted in a manner that will minimize disturbance to vegetation, drainage channels, and intermittent and perennial streambanks. In addition, all existing roads will be left in a condition equal to or better than their condition prior to the construction of the transmission line.
- Mitigation Measure 11 – All requirements of those entities having jurisdiction over air quality matters will be adhered to and any necessary permits for construction activities will be obtained. Open burning of construction debris (cleared trees, etc.) will not be allowed on BLM administered land.
- Mitigation Measure 18 – The alignment of any new access roads or overland routes will follow the designated area's landform contours where possible, providing that such alignment does not additionally impact resource values. This would minimize ground disturbance and reduce scarring.
- Mitigation Measure 23 – The contractor or APS will submit to the BLM a proposed road development plan for inclusion in the POD for the alignment between Burnt Mountain (Links 60/70) and Link 110. The goal of the plan is to limit new road construction to a minimum and discourage an east to west travel corridor.

## **5.2. Vehicle Operation and Other Mitigation Measures**

In addition to mitigation measures pertaining to traffic management and the construction of access roads, the following measures also will be implemented in association with the operation of vehicles during construction:

- All vehicles will be equipped with approved spark arrestors and appropriate fire suppression equipment (see Appendix A4 – Fire Protection Plan).
- All vehicle undercarriages will be washed to prevent the spread of noxious weeds prior to entering the project site.
- All vehicles are to maintain current registration and will be maintained in good working condition, including emissions control devices (see Appendix A6 – Erosion, Dust Control, and Air Quality Plan).
- Vehicle refueling and servicing activities will be performed in designated construction zones located more than 100 feet from wetlands and streams (see Appendix A7 – Hazardous Materials Management Plan).
- The construction contractor must secure all construction related equipment and storage yards to prevent unauthorized use of equipment that could result in avoidable environmental impacts.
- The public and agencies will be informed regarding construction activity in the area as determined by the BLM Authorized Officer.

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## **APPENDIX A4: FIRE PROTECTION PLAN**

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## **1. INTRODUCTION**

This plan details measures that should be implemented to: (1) reduce the risk of starting a fire and (2) suppress a fire, in the event one does occur, within the construction area during project construction, operation, and maintenance.

### **1.1. Purpose**

The risk of fire danger during construction of a transmission line is related largely to the use of vehicles and other motorized equipment operating off roadways, the handling and use of explosive materials and flammable liquids, and welding.

The purpose of this plan is to outline responsibilities, notification procedures, fire prevention measures and precautions, fire suppression equipment, initial response procedures, and postfire rehabilitation strategies related to the project. The goal is to minimize risk of project-related fires and, in case of fire, provide for immediate suppression within the construction area. Other plans containing information related to fire protection include: Appendix A5 – Blasting Plan Methodology; Appendix A7 – Hazardous Materials Management Plan; and Appendix A8 – Emergency Preparedness and Response Plan.

### **1.2. Regulatory Compliance**

The project will be subject to state, county, and federally enforced laws, ordinances, rules, and regulations that pertain to fire prevention and suppression activities. Key regulatory agencies include the BLM and local fire protection agencies in Maricopa County.

## **2. RESPONSIBILITIES**

### **2.1. Bureau of Land Management**

The BLM Fire Management Officer (FMO) will oversee all fire control activities in his/her administrative unit. The FMO will discuss fire protection stipulations at the project kickoff meeting, which will be attended by the BLM Authorized Officer, CIC, construction contractor, and environmental monitors.

When fire suppression is the responsibility of the BLM, current BLM standard firefighting rates for labor will be used. Equipment will be paid at negotiated rates established in BLM rental agreement contracts for the particular working season. The BLM may call on the construction contractor's workers and equipment in emergencies for project-related fires outside the project area. Payment will be made in a similar manner to that above.

### **2.2. Construction Contractor**

It will be the responsibility of the construction contractor to notify the BLM when a project-related fire occurs within or adjacent to the construction area. The construction contractor will be responsible for any fire started, in or out of the project area, by its employees or operations during construction; as well as for fire suppression and rehabilitation. The construction

contractor will take aggressive action to prevent and suppress fires on and adjacent to the project area, and will utilize his/her workers and equipment for fighting fires within the project area.

All federal, state, and county laws, ordinances, rules, and regulations that pertain to prevention, presuppression, and suppression of fires will be strictly adhered to by the construction contractor. All personnel will be advised of their responsibilities under the applicable fire laws and regulations.

Costs involved with contractor-caused fires will be charged to the construction contractor. There will be no extension of time for construction based on delays caused by construction contractor-related fires. Specific construction-related activities and safety measures will be implemented during construction of the transmission line, in order to prevent fires and to ensure quick response and suppression in the event a fire occurs as specified in this Fire Protection Plan.

#### **2.2.1. Construction Crew**

- If a fire starts in the project area, the construction crew will initiate fire suppression activities until relieved by the appropriate fire authorities and notify the construction contractor's Fire Marshall (see below) when a construction fire occurs in the area.
- Available project crews will be immediately alerted when a contractor-caused fire occurs in the project area. Project tools, equipment, and trained workers will immediately be sent to control the fire.

#### **2.2.2. Construction Contractor, Designated Fire Marshall**

The construction contractor will designate a Fire Marshall that will be responsible for the following:

- Conducting regular inspections of tools, equipment, and first aid kits for completeness, as required by the CIC
- Conducting regular inspections of storage areas and practices for handling flammable fuels to confirm compliance with applicable laws and regulations, as required by the CIC
- Posting smoking and fire rules at centrally visible locations
- Coordinating initial response to contractor-caused fires within the project areas
- Accompanying the CIC on fire inspections of the project areas
- Ensuring that all construction workers and subcontractors are aware of the contents of this Fire Prevention Plan
- Remaining on duty when construction activity is in progress, and any additional periods where fire safety is an issue
- Reporting all wildfires in accordance with the notification procedures described in the notification section (below)
- If a fire starts in the project area, initiating and implementing fire suppression activities until relieved by the appropriate fire agencies; fire suppression personnel and equipment, including water trucks, will be dispatched within 15 minutes from the time a fire is reported
- Issuing current fire potential and fire safety warnings

### **2.3. Compliance Inspection Contractor**

The CIC and the Fire Marshall will accompany the BLM FMO on fire inspections and take corrective action when notified that fire protection requirements are not in compliance. The CIC will notify the construction contractor to stop or reduce construction activities that pose a significant fire hazard until appropriate safeguards are taken.

### **2.4. Notification**

The construction contractor's Fire Marshall will notify the CIC, who will immediately notify the BLM Authorized Officer and the BLM's FMO, if a fire is started in the project area during construction. During operation and maintenance activities, the project Proponent's maintenance crews, or contract crews, will be responsible for the immediate notification if a fire is started in the project area. The construction contractor and the Proponent will have notification telephone numbers readily available for all employees in case of fire, and will update the following emergency contact list (Table A4-1) with any changes prior to construction or maintenance within the project area.

<b>Table A4-1.      Emergency Fire Contacts</b>
<b>Call 911 First</b>
<b>Bureau of Land Management</b> Fire Calls: 911 Southwest Coordination Center Arizona – (800) 309-7081 Wildfire Reporting: call Southwest Coordination Center

## **3. FIRE PREVENTION MEASURES**

The following fire prevention measures will be implemented at all times by the construction contractor during construction, operation, and maintenance of the project:

### **3.1. Standard Mitigation Measures**

- Mitigation Measure 1 – All construction vehicle movement outside of the right-of-way will be restricted to predesignated access, contractor acquired access, or public roads.
- Mitigation Measure 2 – The limits of construction activities will typically be predetermined, with activity restricted to and confined within those limits. No paint or permanent discoloring agents will be applied to rocks or vegetation to indicate survey or construction activity limits. The right-of-way boundary will be flagged in environmentally sensitive areas described in the specific POD to alert construction personnel that those areas should be avoided.
- Mitigation Measure 10 – All construction and maintenance activities shall be conducted in a manner that will minimize disturbance to vegetation, drainage channels, and intermittent and perennial streambanks. In addition, all existing roads will be left in a

condition equal to or better than their condition prior to the construction of the transmission line.

- Mitigation Measure 11 – All requirements of those entities having jurisdiction over air quality matters will be adhered to and any necessary permits for construction activities will be obtained. Open burning of construction debris (cleared trees, etc.) will not be allowed on BLM administered land.
- Mitigation Measure 14 – During operation of the transmission line, the right-of-way will be maintained free of construction-related nonbiodegradable debris.
- Mitigation Measure 15 – Totally enclosed containment will be provided for all debris. All construction waste, including debris, litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials, will be removed to a disposal facility authorized to accept such materials.

### **3.2. Other Fire Prevention Measures**

- Smoke only in approved areas. No smoking will be allowed while operating equipment or while walking or working in areas with vegetation.
- In areas where smoking is allowed, completely extinguish all burning tobacco and matches and discard them in ash trays, not on the ground.
- Instruct all field personnel about emergency response for fire events.
- Clear away all flammable material for a minimum of 10 feet, including snags (fallen or standing dead trees) from areas of operation where a spark, fire, or flame could be generated.
- If a fire does start by accident, immediate steps will be taken to extinguish it (if it is safe to do so) using available fire suppression equipment and techniques taught at field crew emergency response training that will be provided by the construction contractor or the Proponent.
- The Proponent or its contractors would notify the BLM of any fires and comply with all rules and regulations administered by the BLM concerning the use, prevention, and suppression of fires on federal lands, including any fire prevention orders in effect at the time of the permitted activity. The holder or its contractors may be held liable for the cost of fire suppression, stabilization, and rehabilitation. In the event of a fire, personal safety would be the first priority of the holder or its contractors. The holder or its contractors would:
  - Operate all internal and external combustion engines (including off-highway vehicles, chainsaws, generators, heavy equipment, etc.) with a qualified spark arrestor. Qualified spark arrestors will be in a maintained and nonmodified condition and meet U.S. Department of Agriculture Forest Service Standard 5100-

1a, or the Society of Automotive Engineers Recommended Practices J335 or J350 (see 43 Code of Federal Regulations [CFR] §8343.1).

- Carry shovels, water, and fire extinguishers on all equipment and vehicles. Equipment will carry extinguishers ABC-rated 10-pound minimum, and vehicles will carry ABC-rated 2.5-pound minimum. If a fire spreads beyond the suppression capability of workers with these tools, all will stop fire suppression action and leave the area immediately via pre-identified escape routes.
- Initiate fire suppression actions in the work area to prevent fire spreading to or on federally administered lands. If fire ignitions cannot be prevented or contained immediately, or it may be foreseeable to exceed the immediate capability of workers, the operation must be modified or discontinued. No risk of ignition or reignition will exist upon leaving the operation area.
- Notify the appropriate agency (see Table A4-1) or 911 immediately of the location and status of any escaped fire.
- Prior to any operation involving potential sources of fire ignition from vehicles, equipment, or other means, review weather forecasts and potential fire danger. Prevention measures to be taken each workday will be included in the specific job briefing. Consideration for additional mitigation or discontinuing the operation must be given in periods of extreme wind and dryness.
- Operate all vehicles on designated roads or park in areas where vegetation is less than 8 inches tall. Vehicles, including the undercarriages, will be cleared of vegetation accumulations and checked periodically to ensure no buildup of flammable vegetation.
- Operate welding, grinding, or cutting activities in areas cleared of vegetation within range of the sparks for that particular action. A spark shield adequate for the sparks may be used to prevent sparks from carrying. A spotter equipped with a round-nose shovel and two ABC-rated 5-pound fire extinguishers and a 5-gallon backpack water pump is required to watch for ignitions during, and 1 hour after, the activity. Water may be used to wet down surrounding vegetation, but does not take the place of an adequately cleared area and spark shield.

#### **4. ACTIVITY-RELATED PRECAUTIONS**

##### **4.1. Burning (Not Allowed)**

No burning activities, campfires, or barbecues will be allowed on the transmission line right-of-way, at material yards, substations, on access roads, or in any other project construction areas.

##### **4.2. Blasting**

No blasting will be performed without the notification of the CIC and the Fire Marshal. Blasting operations will follow the guidelines described in the Blasting Plan Methodology (see Appendix A5). The Blasting Contractor's vehicle will be equipped with adequate fire suppression equipment (see Section 5, below).



#### **4.3. Welding**

The construction contractor's Construction Manager must approve any welding or cutting of power line structures or their component parts. Approved welding or cutting activities will only be performed in areas cleared of vegetation a minimum of 10 feet around the area. Welding or cutting activities will stop 1 hour before all fire response personnel leave a construction area, to reduce the possibility of welding activities smoldering and starting a fire. At least one person will be designated as a "spotter" to watch for ignitions while equipped with suppression tools including fire extinguishers, a shovel, and a backpack water pump. The "spotter" will not be the same person who is engaged in welding, cutting, grinding, or drilling. The "spotter" will remain on scene for at least 1 hour after the work has been completed to ensure no fire risk exists. In addition, these activities will stop 1 hour before all fire suppression personnel leave a construction area, to reduce the possibility of smoldering to ignite a fire. Welder vehicles will be equipped with fire suppression equipment (see Section 5, below).

#### **4.4. Spark Arrestors**

All equipment assigned to the project will be inspected and approved. Internal combustion engines (stationary or mobile) will be equipped with spark arrestors that meet agency standards, and for which the following guidelines will apply:

- light trucks and cars with factory installed (type) mufflers (in good condition) may be used on roads where the roadway is cleared of all vegetation
- on roads where vegetation exists, spark arrestors will be used
- spark arrestors will be in good working order
- vehicles equipped with catalytic converters may represent potential fire hazards and will be parked in areas cleared of vegetation
- if required, flues used in extra work areas will be equipped with spark arrestors in good working order and meet agency standards

#### **4.5. Smoking**

Smoking signs and fire rules regarding the project will be posted on the project bulletin board at the construction contractor's field office, at all show-up locations, and on all portable toilet doors during the fire season (to be determined by the BLM Authorized Officer). The construction contractor is responsible for and will require supervisory personnel to enforce all posted rules; will prohibit smoking except in designated areas approved by the BLM; and will prohibit smoking during any season while operating equipment, walking, or working in areas of vegetation.

#### **4.6. Warning Devices**

The use of torches, fuses, highway flares, or other warning devices with open flames will be prohibited. The construction contractor will use only electric or battery-operated warning devices within the project area.

#### **4.7. Parking and Vehicle Storage Areas**

Equipment parking areas and small stationary engine sites will be cleared of all flammable materials as determined necessary by the BLM Authorized Officer. Gas and oil storage areas will be cleared of all flammable material for a distance of 100 feet, with "NO SMOKING" signs posted throughout the area. All used and discarded oil filters and oily rags or other waste will be disposed of in an approved landfill. Glass jugs or bottles will not be used as containers for gasoline or other flammable materials.

#### **4.8. Signage**

"NO SMOKING" signs and fire rules will be posted at material yards and key construction sites during the fire season, as determined by the BLM.

#### **4.9. Power Saws**

All gasoline powered saws will be provided with approved spark arrestors/mufflers. Gasoline powered chain saws will be maintained in proper working condition throughout their assignment to the project. In addition, chain saws will comply with the following requirements:

- Arrestors/mufflers will contain a 0.023-inch mesh, stainless steel screen.
- During the period of use, the operator will have one long-handled, round point, size 0 shovel that will be maintained in proper working condition; the operator will also carry an approved belt carrying-type fire extinguisher.
- Refueling will be done in an area that has been cleared of flammable materials; power saws will be moved at least 10 feet from the place of refueling before starting (all gas will be carried in approved metal safety containers only).

#### **4.10. Equipment Refueling**

Fuel trucks will have at a minimum a 35-pound fire extinguisher charged with necessary chemicals to control electrical and fuel fires. Helicopter fuel trucks will be grounded to the helicopter during refueling.

#### **4.11. Access**

The construction contractor will provide continuous access to roads for emergency vehicles during construction. The access roads could have the potential to be used as fire breaks, to help in fire suppression.

### **5. MINIMUM FIRE PREVENTION AND SUPPRESSION EQUIPMENT REQUIRED**

The following fire prevention and suppression equipment will be readily available and maintained in proper working condition (per OSHA publication 3080) at all times during project construction.

In all motorized vehicles in each active construction area:

- one long handled round point shovel
- one ax or Pulaski fire tool
- one 5-pound ABC Dry Chemical Fire Extinguisher
- one 5-gallon water backpack (or other approved container) full of water or other extinguishing solution
- hardhat, work gloves, and eye protection

In addition to the fire suppression equipment required in motorized vehicles, construction work sites shall comply with the following:

- Power saws, if required for construction, equipped with an approved spark arrestor and accompanied by one 5-pound ABC dry chemical fire extinguisher and a long handled, round point shovel when used away from a vehicle (see Section 4.9, above).
- Fuel service trucks shall contain one 35-pound capacity fire extinguisher charged with the necessary chemicals to control electrical and fuel fires.
- Wood cutting, welding, or other construction work sites that have a higher risk of starting fires shall have at least two long handled round point shovels and two 5-pound ABC dry chemical fire extinguishers available onsite.
- Every construction work site shall have at least one radio and/or cellular/satellite telephone to contact fire suppression agencies or project management.
- Every at-risk work site shall include backpumps filled with water (2 at each wood cutting site, 1 at each welding site, and 2 at each tower installation or construction site, or any other at-risk activity site).

During periods of heightened fire danger, the following equipment shall be available in the construction area to aid in response to a fire situation, or stationed near high-risk construction work sites:

- One fire suppression vehicle equipped with a water tank, minimum 500-gallon capacity, 250 feet of 3/4-inch heavy-duty rubber hose, and a pump with a discharge capacity of at least 20 gallons per minute. The pump shall have fuel capacity to operate for at least 2 hours.
- The fire suppression vehicle shall be outfitted with one tool cache for fire use only, containing at a minimum: 2 long-handled round-point shovels, 2 axes or Pulaski fire tools, and 1 chainsaw of 3.5 or more horsepower, with a cutting bar of at least 20 inches in length.

## **6. IN CASE OF FIRE – INITIAL RESPONSE AND EMERGENCY CONTACTS**

If a fire does start in the project area and if the fire is manageable, safely attempt to control it with a fire extinguisher or other available equipment (e.g., using shovel to throw dirt on the fire or remove small patches of vegetation). As part of the environmental compliance training program, the construction contractor will receive training on initial fire suppression techniques, reporting requirements, how to determine if a fire is manageable and what control measures should be implemented by on-site field crews, and at what point field crews should evacuate.

The training also will address how to respond to wildfires in the area and maintain knowledge of and plans for evacuation routes.

If the fire is unmanageable, field crews will evacuate and first call 911, followed by a call to the district dispatch for the area (see emergency contacts listed on Table A4-1). All fires must be reported to the jurisdictional fire agency regardless of size and actions taken.

## **7. POSTFIRE REHABILITATION STRATEGIES**

If the cause of a fire is determined to be the result of the project, the construction contractor will implement rehabilitation measures as required by the BLM, and the following postfire rehabilitation measures will be implemented by the construction contractor:

- After a fire has been extinguished, the burn areas will be reclaimed in accordance with BLM requirements. Small burn areas will be revegetated to the native vegetation using appropriate seed mixtures. Larger burn areas may require specific restoration plans. Coordination with the BLM is necessary to determine requirements for each particular area, depending upon the size and location of a fire, and the location of sensitive resources.

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## **APPENDIX A5:    BLASTING PLAN METHODOLOGY**

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## **1. INTRODUCTION**

This Blasting Plan Methodology outlines methods to mitigate risks and potential impacts associated with blasting procedures, should blasting be required for the construction of the project. Also included in this section is a preliminary outline for the Blasting Plan, to be prepared by the construction contractor and submitted to the BLM for final review and approval.

### **1.1. Purpose**

Once completed, the Blasting Plan will provide construction crews, the CIC, and environmental monitors with project-specific information concerning blasting procedures, including the safe use and storage of explosives. The objective of the Blasting Plan is to prevent adverse impacts to human health and safety, property, and the environment that could potentially result from the use of explosives during project construction.

Blasting may be needed in certain areas with rocky terrain to excavate structure foundations, prepare substation pads, and for construction of access roads. Blasting will be used only in areas where traditional excavation and earth moving equipment and practices are not able to accomplish the excavation. In addition, the construction contractor may elect to use implosive sleeves during line stringing activities to splice conductor and shield wire together. Areas where blasting will likely occur will be identified based on the geological setting of the proposed alignment, as identified in the geotechnical investigation to be conducted for the project.

### **1.2. Regulatory Compliance and Procedures**

The construction contractor will be responsible for preparing and implementing the Blasting Plan and must comply with all applicable federal, state, and local laws and regulations that pertain to explosives. No blasting operations will be undertaken until approval and appropriate permits have been obtained from the applicable agencies. Failure to comply with such laws could result in substantial financial penalty and/or imprisonment.

The construction contractor will use a qualified, experienced, and licensed blasting contractor that will perform the blasting using current and professionally accepted methods, products, and procedures to maximize safety during blasting operations. Blasting procedures will be carried out according to, and in compliance with, applicable laws and will be closely monitored by the CIC.

## **2. BLASTING PLAN GUIDANCE**

Prior to blasting, the construction contractor shall prepare a Blasting Plan for review and approval by the BLM, CIC, and other applicable parties. The Plan will address safety, as well as design for production and controlled blasting. It will also contain the full details of the drilling and blasting patterns, as well as the controls the blasting contractor proposes to use for both production and controlled blasting. Review of the Plan by the parties shall not relieve the blasting contractor of the responsibility for the accuracy and adequacy of the Blasting Plan when implemented in the field. A minimum of 2 weeks should be allowed for review and approval of the Blasting Plan by the BLM and appropriate agencies. If at any time changes are proposed to

the Plan, the construction contractor shall submit them to the BLM and CIC for review and approval.

## **2.1. Overview of Blasting Principles**

### **2.1.1. Locations**

The construction contractor's blasting contractor will avoid blasting in potential rockslide/landslide areas to the maximum extent possible, and will consult with a geologist before blasting in such areas should avoidance not be possible (see Preconstruction Activities). A common practice for splicing conductor wire together is the use of 'implosive sleeves,' which use explosive materials. The blasting contractor should be knowledgeable about this practice and should coordinate with the CIC, particularly with regard to the locations of these practices.

### **2.1.2. Materials**

The blasting contractor will determine the specific materials needed for blasting operations. These materials will be included on the hazardous materials list for the project, and their use and storage will comply with applicable federal, state, and local laws and regulations.

## **2.2. Blasting Plan Contents**

The Blasting Plan prepared by the construction contractor shall contain the following minimum information in the following format:

1. Purpose
2. Scope of the Blasting
3. Definitions
4. Responsibilities
  - a. Management Organization
  - b. Authority Responsibility
  - c. Blaster in Charge (licensed in Arizona )
5. Location of Blasting Area
  - a. Description of Blasting Area
  - b. Description of Bedrock and Geological Problems
  - c. Description of Adjacent Utility Facilities
6. Environmental Considerations
7. Safety Considerations
  - a. General
  - b. Warning Signs and Signals
  - c. Procedures around Adjacent Utility Facilities
  - d. Traffic Control
  - e. Emergency Blast Initiation
  - f. Safety Publications
  - g. Fire Prevention
  - h. Safety Hazards
  - i. Emergency Services and Communication

- j. Minor or Non-Emergency Medical Care
- k. First Aid
- 8. Risk Management
  - a. Protection of Adjacent Utility Facilities
  - b. Lightning
  - c. Flyrock (note: flyrock will be controlled with blasting mats)
  - d. Carbon Monoxide
  - e. Ground Vibrations
  - f. Seismically Sensitive Receptors
  - g. Preblast Survey and Inspection
  - h. Blast Damage Complaints
  - i. Airblast
- 9. Blast Design Concept
  - a. Station limits of proposed shot
  - b. Plan and section views of proposed drill pattern, including free face, burden, blasthole spacing, blasthole diameter, blasthole angles, lift height, and subdrill depth
  - c. Loading diagram showing type and amount of explosives, primers, initiators, and location and depth of stemming
  - d. Initiation sequence of blastholes, including delay times and delay system
  - e. Manufacturers' data sheets for all explosives, primers, and initiators to be employed
- 10. Procedures
  - a. Delivery of Explosives
  - b. Storage of Explosives and Blasting Agents
  - c. Blast Hole Drilling
  - d. General Handling of Explosives
  - e. Blast Hole Loading
  - f. Notification
  - g. Initiation of Blast
  - h. Misfire Management
  - i. Test Blasting
- 11. Records
- 12. Attachments

### 3. SAFETY PROCEDURES

Safe storage and use of explosive materials will be a top priority during construction. The safety measures discussed in this section are intended to prevent theft and/or vandalism of the explosive materials; protect the explosive materials against fire; and prevent personal injury and property damage. These measures are intended as general guidelines only. Additional safety procedures specific to the blasting requirements for construction of the project will be identified by the construction contractor in the Blasting Plan.

### **3.1. Storage**

Explosives must be stored in an approved structure (magazine) and kept cool, dry, and well-ventilated. The Proponent's construction contractor will provide the Bureau of Alcohol, Tobacco, Firearms and Explosives (BATF) Regulatory Enforcement Office in Arizona, with a list of dates and locations for the explosives and blasting agent storage facilities to be used on the project, at least 14 days before the establishment of such storage facilities.

At a minimum, the following storage requirements will be implemented:

- Explosives must be stored in an approved magazine; storage facilities will be bullet-resistant, weather-resistant, theft-resistant, and fire-resistant.
- Magazine sites will be located in remote (out-of-sight) areas with restricted access, kept cool, dry, and well ventilated, and will be properly labeled and signed.
- Detonators will be stored separately from other explosive materials.
- The most stringent spacing between individual magazines will be determined according to the guidelines contained in the BATF publication or state or local explosive storage regulations.
- Both the quantity and duration of temporary onsite explosives storage will be minimized.

The Blasting Contractor will handle and dispose of dynamite storage boxes in accordance with relevant federal, state, and local laws.

### **3.2. Blasting Notification and Safety Procedures**

The construction contractor will obtain a permit from the appropriate county, as needed, for the period when blasting may occur, and will comply with the following requirements developed by the BLM:

- The holder shall publish a proposed blasting schedule in the local newspaper, 1 week prior to any blasting taking place. The schedule shall identify the location, dates, and times that blasting will occur. No blasting shall occur outside of the published schedule, except in emergency situations.
- The holder shall post warning signs at all entry points for the project. Warning signs shall contain information on blasting, including the general hours blasting might take place and the audible signals to be used that warn of impending blasting, indicating that the site is all clear.
- Access points to areas where blasting will take place will be blocked, to prevent access by the public, at least 30 minutes prior to blasting. The site shall be swept 5 minutes prior to any shot being put off, to ensure that no unauthorized personnel have wandered onto the site. An audible warning signal, capable of carrying for 0.5 mile, shall be used at least

2 minutes prior to the shot being put off. An "all clear" signal will be given once it has been determined that the area is safe.

- Blasting in the vicinity of pipelines will be coordinated with the pipeline operator and will follow operator-specific procedures, as necessary.

A determination of "all clear" from danger will be derived once the blasting area has been inspected for undetonated or misfired explosives. The blasting area will also be inspected for hazards such as falling rock and rock slides. Once the area has been inspected and these issues have been addressed, the "all-clear" signal as described above will sound, and persons will be able to safely re-enter the blast zone.

Additional safety precautions will be developed to address site-specific conditions at the time of the blast. Special attention will be given to preventing potential hazards in the blasting area resulting from flying rock, destabilized walls, structures, presence of low flying aircraft, and dispersion of smoke and gases.

### **3.3. Fire Safety**

The presence of explosive materials on the project site could potentially increase the risk of fire during construction. Special precautions will be taken to minimize this risk in conjunction with the Fire Protection Plan (Appendix A4), including but not limited to:

- prohibiting ignition devices within 50 feet of explosives storage areas
- properly maintaining magazine sites so that they are clear of fuels and combustible materials, are well ventilated, and are fire resistant
- protecting magazines from wildfires that could occur in the immediate area
- posting fire suppression personnel at the blast site during high fire danger periods
- prohibiting blasting during extreme fire danger periods

### **3.4. Transportation of Explosives**

Transportation of explosives will comply with all applicable federal, state, and local laws, including Title 49 of the Code of Federal Regulations, Chapter III. These regulations are administered by the U.S. Department of Transportation (U.S. DOT) and govern the packaging, labeling, materials compatibility, driver qualifications, and safety of transported explosives. In general, these regulations require that vehicles carrying explosive materials must be well maintained, properly marked with placards, and have a nonsparking floor. Materials in contact with the explosives will be nonsparking, and the load will be covered with a fire- and water-resistant tarpaulin. Vehicles must also be equipped with fire extinguishers and a copy of the Emergency Response Guidebook (U.S. DOT 1993). Every effort will be made to minimize transportation of explosives through congested or heavily populated areas.

Prior to loading a vehicle that is appropriate for carrying explosives, the vehicle shall be fully fueled and inspected to ensure its safe operation. Refueling of vehicles carrying explosives shall be avoided. Smoking shall be prohibited during the loading, transporting, or unloading of

explosives. In addition, the following specific restrictions apply to transport of other items in vehicles carrying explosives:

- tools may be carried in the vehicle, but not in the cargo compartment
- detonation devices can, in some cases, be carried in the same vehicle as the explosives, but must be stored in a specially constructed compartment(s)
- batteries and firearms shall never be carried in a vehicle with explosives
- vehicle drivers must comply with the specific laws related to the materials being transported

Vehicles carrying explosives shall not be parked or left unattended, except in designated parking areas with approval of the State Fire Marshall. When traveling, vehicles carrying explosives will avoid congested areas to the maximum extent possible.

#### **4. BLASTING MITIGATION MEASURES**

Blasting has the potential to cause environmental impacts. Implementing the protection measures listed below will mitigate these impacts. Stipulations developed by the BLM will be followed for protection of sensitive species, as well as the required notification discussed in Section 3.2 (above). The construction contractor will notify the CIC and environmental monitors 24 to 48 hours prior to scheduled blasting, and comply with the permit requirements for notification by the appropriate counties, including any requirements for dust abatement. Regular field meetings will be held with the CIC and environmental monitors to review the process and its implementation. If changes are needed to the notification process, changes will be made to facilitate protection of environmental resources.

##### **4.1. Standard Mitigation Measures**

- Mitigation Measure 4 – In construction areas (e.g., marshalling yards, structure sites, spur roads from existing access roads) where ground disturbance is significant or where recontouring is required, surface restoration will occur as required by the landowner or land-management agency. The method of restoration will typically consist of returning disturbed areas to their natural contour (to the extent practical), reseeding or revegetating with native plants (if required), installing cross drains for erosion control, placing water bars in the road, and filling ditches. Seed must be tested and certified to contain no noxious weeds in the mix by the State of Arizona Agricultural Department. Seed viability must also be tested at a certified laboratory approved by the Authorized Officer.
- Mitigation Measure 5 – Watering facilities (e.g., tanks, developed springs, water lines, wells) will be repaired or replaced to their predisturbed conditions, as required by the landowner or land-management agency, if they are damaged or destroyed by construction activities.
- Standard Mitigation Measure 12 – Fences and gates, if damaged or destroyed by construction activities, will be repaired or replaced to their original predisturbed condition, as required by the landowner or the land-management agency. Temporary gates will be installed only with the permission of the landowner or the land-management

agency, and will be restored to their original predisturbed condition following construction.

#### **4.2. Other Blasting Mitigation Measures**

- Avoid potential rockslide/landslide areas to the maximum extent possible and consult the blasting geologist before blasting in such areas.
- Design blasts to minimize ground vibrations that can cause slope instability and impact wells and springs.
- Limit hours of blasting to Monday through Saturday from 7:00 am to 7:00 pm, when blasting within 3,000 feet of sensitive receptors.
- Avoid blasting within 500 feet of wells/springs to the maximum extent possible.
- The Blasting Plan will identify blasting procedures, including safety, use, storage, and transportation of explosives that will be employed where blasting is needed, and will specify the locations of needed blasting.
- All blasting will be performed by registered licensed blasters who will be required to secure all necessary permits and comply with regulatory requirements in connection with the transportation, storage, and use of explosives and blast vibration limits for nearby structures, utilities, wildlife, and fish (where blasting is conducted in waterbodies).
- Appropriate flags, barricades, and warning signals will be used to ensure safety during blasting operations. Blast mats will be used when needed to prevent damage and injury from flyrock.
- Blasting in the vicinity of pipelines will be coordinated with the pipeline operator and will follow operator-specific procedures, as necessary.
- Damage that results from blasting will be repaired, or the owner will be fairly compensated.
- Proper blasting techniques, including proper cover of charges, should be followed.
- Matting will be used in rock blasting operations to minimize and control dust.
- Notification of blasting activities will be provided to nearby residents.
- The blasting contractor will prepare site-specific blasting plans.
- The blasting plan for the proposed Project will also stipulate the following:
  - Explosives will not be stored on federal land without prior written permission from the land management agency. Copies of this permission will be posted on each magazine.



- Seventy-two-hour advance notice of blasting activities will be given to the land management agency, railroads, highway departments, and local communities; occupants of nearby residences, buildings, and businesses; and local farmers.
- Warning signs will be erected and maintained at all approaches to the blast areas and flaggers will be stationed on all roadways passing within 1,000 feet of blasting activities.
- Explosives will not be primed or fused until just before use.
- Blasting will take place during daylight hours only and will be monitored with three axis seismographs to ensure safe vibration levels are not exceeded.
- Vibration measured as peak particle velocity will not exceed 4 inches per second adjacent to an underground pipeline, and 2 inches per second for any aboveground structure (including water wells).

Should preconstruction bird surveys identify occupied nests, appropriate avoidance periods and nondisturbance buffers will be established on a case-by-case basis, in accordance with each species' specific needs and as agreed upon by the BLM<sup>1</sup>.

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<sup>1</sup> If pre-construction surveys find nests are not occupied, blasting may be allowed in the buffer zones during the avoidance period.

**APPENDIX A6:    EROSION, DUST CONTROL,  
AND AIR QUALITY PLAN**

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## **1. INTRODUCTION**

This Erosion, Dust Control, and Air Quality Plan addresses regulatory compliance, environmental concerns, mitigation recommendations, and monitoring to ensure impacts associated with construction activities are minimized as they relate to soil conservation and air quality.

### **1.1. Purpose**

This plan provides measures to be utilized by the BLM, CIC, and construction contractor to ensure the protection of the soils and air quality that will be affected by the project, and to be implemented during the construction, operation, and maintenance phases of the project. These measures are intended to address (1) soil erosion and sedimentation, and (2) minimization of dust and emissions from construction-related activities.

This plan describes a number of mitigation measures that can be used to achieve these goals. Determination of the appropriate control measures to use in a particular area will depend on a variety of factors, including weather conditions, selected construction techniques, site characteristics, extent of area to be disturbed, and other factors.

### **1.2. Regulatory Compliance**

Construction, operation, and maintenance activities for the project are subject to various regulations designed to protect environmental resources and the public from erosion, dust, and other possible effects to air quality. The following permits and documents contain the requirements for preventing accelerated erosion and minimizing dust and emissions. Refer to these permits and documents, along with this plan, when assessing which mitigation measures are appropriate for a specific area. At a minimum, the Proponent or the construction contractor will need to adhere to or obtain the following permits.

#### **1.2.1. Federal**

- BLM – Right-of-Way Grant
- Environmental Protection Agency– National Pollutant Discharge Elimination System Permit: Clean Water Act (CWA) (33 United States Code [USC] 1342)
- U.S. Army Corps of Engineers – CWA, Section 404 Permit (Nationwide Permit Number 12)

#### **1.2.2. State**

- Arizona Department of Environmental Quality (ADEQ), Arizona Pollutant Discharge Elimination System (AZPDES)
- Air Quality Division, Air Quality Permit

### **1.2.3. Local**

- To be provided upon completion of final engineering.

## **2. ENVIRONMENTAL CONCERNS**

### **2.1. Soil Conservation and Erosion**

Soil conservation within the project area includes minimizing impacts that could potentially affect soils from the construction and operation of the transmission line, such as minimizing wind and water erosion, soil compaction, surface disturbance, and construction activities in wet soils. Prior to ground disturbance, geotechnical studies will be conducted and a report for affected areas will be prepared to provide the Proponent more specific detail/measures regarding soil conservation within the project area.

Erosion potential is the result of several factors, including slope, vegetation cover, climate, and the physical and chemical characteristics of the soil. Increased soil erosion may occur when vegetation is removed during construction or in areas where the surface is disturbed by heavy equipment. Increased water erosion often occurs during high-intensity or long-duration rainstorms, and may reduce the productivity of the soil as well as affect water quality of streams by accelerating sediment loading. Wind is also an erosion factor throughout portions of the project area. Soil compaction could also be of concern if there is repeated traffic use on sections of access roads.

Where disturbance is anticipated in areas of steep terrain with high potential for erosion, vegetation clearing and grading will be conducted in the least invasive manner practicable, and soil stabilization and reclamation practices will be implemented in order to reduce erosion. In select locations, helicopter construction may be used to further reduce these impacts. In areas of soil compaction (e.g., temporary access roads), soil treatment and restoration will be implemented as directed by the BLM.

### **2.2. Air Quality and Dust Control**

Construction of the transmission line and related facilities will cause a temporary increase in fugitive dust. Ambient levels of nitrogen oxides, hydrocarbons, and carbon monoxide near the construction zone will also be temporarily increased due to emissions from heavy construction equipment. Related facilities will cause a minimal increase in fugitive dust.

Air quality control measures are intended to minimize fugitive dust and air emissions and to maintain conditions as free from air pollution as is practical. All requirements of those entities having jurisdiction over air quality matters will be adhered to, and any permits needed for construction activities will be obtained (see Section 1, Table 1-1 of this POD). The construction contractor will not proceed with any construction activities without taking reasonable precaution to prevent excessive particulate matter from becoming airborne and creating nuisance conditions.

Excessive exhaust emissions from vehicles and heavy equipment will be prevented by proper maintenance, and no open burning of construction trash will be allowed unless permitted by the Authorized Officer.

Where necessary, water may be used for dust control during construction, including the grading of roads or the clearing of land and the right-of-way, and will be applied on unpaved roads, material stockpiles, and other surfaces that can create airborne dust. Where application of water is not significant, material stockpiles will be enclosed. In addition, open-bodied trucks transporting materials likely to become airborne will be covered, and earth or other materials that may become airborne will promptly be removed from paved roads. Where required, matting will be used in rock blasting operations to minimize and control dust (see Appendix A5 – Blasting Plan Methodology).

### **3. MITIGATION**

The mitigation measures described in this section are applicable to project construction, reclamation, operation, and maintenance of the project. If new disturbances occur during the operation and maintenance phases of the project, or if erosion control and air quality measures implemented during construction and reclamation are not effectively minimizing accelerated erosion and reducing dust, these mitigation measures will be reviewed and where necessary reimplementation will occur under the direction of the BLM Authorized Officer, CIC, and construction contractor.

#### **3.1. Mitigation**

Because of potential impacts from construction activities, several measures may be necessary to mitigate particular impacts. Following are the standard mitigation measures that will be adhered to during construction on a project area-wide basis.

##### **3.1.1. Standard Mitigation**

- Mitigation Measure 1 – All construction vehicle movement outside of the right-of-way will be restricted to predesignated access, contractor acquired access, or public roads.
- Mitigation Measure 2 – The limits of construction activities will typically be predetermined, with activity restricted to and confined within those limits. No paint or permanent discoloring agents will be applied to rocks or vegetation to indicate survey or construction activity limits. The right-of-way boundary will be flagged in environmentally sensitive areas described in the specific POD to alert construction personnel that those areas should be avoided.
- Mitigation Measure 3 – In construction areas where recontouring is not required, vegetation will be left in place wherever possible, to avoid excessive root damage and allow for resprouting.
- Mitigation Measure 4 – In construction areas (e.g., marshalling yards, structure sites, spur roads from existing access roads) where ground disturbance is significant or where recontouring is required, surface restoration will occur as required by the landowner or land-management agency. The method of restoration will typically consist of returning disturbed areas to their natural contour (to the extent practical), reseeding or revegetating with native plants (if required), installing cross drains for erosion control, placing water



bars in the road, and filling ditches. Seed must be tested and certified to contain no noxious weeds in the mix by the State of Arizona Agricultural Department. Seed viability must also be tested at a certified laboratory approved by the Authorized Officer.

- Mitigation Measure 10 – All construction and maintenance activities shall be conducted in a manner that will minimize disturbance to vegetation, drainage channels, and intermittent and perennial streambanks. In addition, all existing roads will be left in a condition equal to or better than their condition prior to the construction of the transmission line.
- Mitigation Measure 11 – All requirements of those entities having jurisdiction over air quality matters will be adhered to and any necessary permits for construction activities will be obtained. Open burning of construction debris (cleared trees, etc.) will not be allowed on BLM administered land.
- Mitigation Measure 17 – Species protected by the Arizona Native Plant Law will be salvaged. A salvage plan, approved by the BLM, will be included in the specific POD. Generally, salvage may include: removal and stockpiling for replanting on site, removal and transplanting out of surface disturbance area, removal and salvage by private individuals, removal and salvage by commercial dealers, any combination of the above.
- Mitigation Measure 18 – The alignment of any new access roads or overland routes will follow the designated area's landform contours where possible, providing that such alignment does not additionally impact resource values. This would minimize ground disturbance and reduce scarring.
- Mitigation Measure 19 – All new access roads not required for maintenance will be permanently closed, using the most effective and least environmentally damaging methods appropriate to that area, with concurrence of the landowner or land manager (e.g., stock piling and replacing topsoil, or rock replacement). This would limit access into the area. Fencing, signing, and other closure methods will be determined by the BLM and paid for by the contractor or APS.
- Mitigation Measure 20 – In designated areas, structures will be placed or rerouted so as to avoid sensitive features such as, but not limited to, riparian areas, watercourses, and cultural sites, or to allow conductors to clearly span the features, within limits of standard tower design.
- Mitigation Measure 23 – The contractor or APS will submit to the BLM a proposed road development plan for inclusion in the POD for the alignment between Burnt Mountain (Links 60/70) and Link 110. The goal of the plan is to limit new road construction to a minimum and discourage an east to west travel corridor.

### **3.2. Other Specific Stipulations and Methods**

#### **3.2.1. Working in Wet Soils**

Construction, operation, and maintenance activities will be restricted when the soil is too wet to adequately support construction or maintenance equipment (i.e., when heavy equipment creates ruts in excess of 5 inches deep over a distance of 100 feet or more in wet or saturated soils). This standard will not apply in areas with silty soils, which easily form depressions even in dry weather. Where the soil is deemed too wet, one or more of the following measures will apply:

- When feasible, reroute all construction or maintenance activities around the wet areas, so long as the route does not cross into sensitive resource areas.
- If wet areas cannot be avoided, implement use of wide-track or balloon-tire vehicles and equipment, or other weight dispersing systems approved by the appropriate resource agencies. The use of geotextile cushions (prefabricated equipment pads) and other materials could also be used to minimize damage to the substrate where determined necessary by resource specialists. If these measures cannot be successfully applied to wet or saturated soil areas, construction or routine maintenance activities will not be allowed in these areas until the CIC and/or BLM Authorized Officer determines it is acceptable to proceed.
- Limit access of construction equipment to the minimum area feasible, remove and separate topsoil in wet or saturated areas, and stabilize subsurface soils with a combination of one or more of the following: grading to dewater problem areas, use weight dispersion mats, and maintain erosion control measures such as surface rilling and back-dragging. After construction is complete, regrade and recontour the area, replace topsoil, and reseed to achieve the required plant densities as required by the BLM.
- If equipment creates excessive ruts in wet or saturated soils as determined by the CIC, and these areas require supplemental dewatering, stabilization, erosion control, and reclamation measures to continue construction during wet conditions, increased impacts on soils and vegetation will be mitigated by restoration and preservation of disturbed soils and vegetation communities offsite. The restoration and/or preservation will take place offsite in the project area, at a ratio to be determined in consultation with the BLM and the Proponent. The final acreage for compensation will be determined by quantifying the postconstruction disturbance area and condition. Even though it is not considered a significant impact, a compensation ratio of 1:1 offsite is proposed to mitigate for any increased permanent or temporary impacts to soils and vegetation related to continuing construction during wet conditions. This mitigation measure will be in addition to the onsite reclamation of the soil and vegetation disturbed by construction activities during wet conditions.

#### **3.2.2. Vegetation Removal Methods**

Vegetation removal and soil disturbances (including temporary road improvements) will be minimized in areas where soil constraints occur. In areas of overland construction, where vegetation removal is required, mowing or cutting will be the primary method used. Plants will

generally be cut at a height that results in the least damage to the root crown during cutting or subsequent damage by vehicles and equipment. Blading will be restricted to those areas as identified in the final engineering drawings.

### **3.2.3. Construction on Expansive Soils**

Prior to construction, soils will be evaluated by the project's geotechnical engineer to determine if they are expansive and if they may have potential effects on the proposed facilities. Where they represent a potential hazard, solutions recommended by the project's geotechnical engineer, such as excavation and replacement of the expansive soils with compacted backfill, will be required. If imported backfill material is used, it must be from a BLM-approved source and certified as free of invasive weeds and propagules (i.e., seeds and root fragments).

### **3.2.4. Reducing Short-Term Erosion and Sedimentation**

The objectives of these measures are to reduce short-term erosion and sedimentation, as well as quickly restore topography and vegetation to preconstruction conditions in all areas required and approved by the BLM. A qualified resource specialist or the CIC will monitor implementation during construction through the operation phase until successful revegetation is achieved. Monitoring of the erosion control measures will continue until reclamation efforts are considered complete and successful. Implementation of the following practices will minimize the effects of grading, excavation, and other surface disturbances in project areas.

- Limit disturbance of soils and vegetation removal to the minimum area necessary for access and construction.
- Inform all construction personnel, before they are allowed to work on the project, of environmental concerns, pertinent laws and regulations, and elements of the erosion control plan.
- Minimize grading; when required and practicable, grading should be conducted away from watercourses (receiving waters) to reduce the risk of material entering the watercourse.
- Graded material should be sloped and bermed where possible, to reduce surface water flows across the graded area.
- Replace excavated materials in disturbed areas and minimize the time between excavation and backfilling.
- Direct the dewatering of excavations onto stable surfaces to avoid soil erosion.
- Use detention basins, certified weed-free straw bales, or silt fences where appropriate.
- Use drainage control structures, where necessary, to direct surface drainage away from disturbance areas and to minimize runoff and sediment deposition downslope from all disturbed areas. These structures include culverts, ditches, waterbars (berms and cross ditches), rolling dips, and sediment traps.

- In areas of highly erodible soils, nonstandard construction equipment and techniques that minimize surface disturbance, soil compaction, and loss of topsoil will be used, such as vehicles with low ground pressure tires or helicopters when feasible and practicable. Vegetation clearing should be minimized to the degree possible. Erodible slopes that do not require grading should be cleared using equipment that results in little to no soil disturbance to the degree practicable.
- Reestablish native vegetation cover in highly erodible areas as quickly as possible following construction, where determined necessary.

### **3.2.5. Drainage Control**

A variety of drainage control structures will be used to direct surface runoff away from the road surface to prevent rill and rut development and to control runoff and sediment discharges. The road improvements will include culverts, water bars at appropriate intervals related to slope and geological material, ditches, and appropriate grades and inclination.

### **3.2.6. Dust Control**

Water or dust suppressant trucks will be the primary means of dust abatement during all phases of construction. At each structure site, the disturbed soil will be watered or treated with a BLM-approved dust suppressant to form a crust. Roads will be treated continuously as needed to minimize dust. Liquid application will be controlled so that pooling will be avoided to the extent possible.

Construction water and water used for dust control will come from permitted sources identified by the construction contractor, and a map showing the locations of these sources will be provided by the CIC. If the quality of the water is found to be causing any environmental changes (i.e., dying vegetation, excessively hard crusting of soils), the construction contractor will test the quality of the water and provide the results to the BLM for review.

All project personnel will be educated on dust control procedures.

### **3.2.7. Reducing Wind or Water Erosion**

To prevent accelerated wind or water erosion on dirt roads, gravel mulches may be added if the mitigation measures described above are not adequate or if the area is not in a sensitive receptor zone. Gravel of approximately 0.75- to 1.5-inch diameter should be used and cover a minimum of 90 percent of the soil surface. Slopes steeper than 3:1 may require additional sediment and erosion control structures.

### **3.2.8. Surface Roughening**

Surface roughening aids establishment of vegetative cover, reduces runoff velocities, increases infiltration, and reduces erosion by providing sediment trapping. Graded areas with smooth surfaces increase the potential for accelerated erosion; therefore, surfaces should be left in a roughened condition whenever possible.

### **3.2.9. Natural Rock Riprap and Erosion Control Matting**

On steep slopes (greater than 30 percent) or in areas of concentrated flows (e.g., waterways), erosion control matting or riprap may be used to stabilize the surface and increase infiltration times.

## **4. MONITORING**

Monitoring of erosion control mitigation measures will continue until reclamation efforts are considered complete and successful, and accelerated erosion has been controlled. The following provides guidance for monitoring the mitigation measures.

### **4.1. Construction and Reclamation Phase**

#### **4.1.1. Erosion Control Structures**

During construction, temporary erosion control structures should be inspected daily by the CIC in areas of active construction or equipment operation; on a weekly basis in areas with no equipment operation; and in all affected areas within 24 hours of each 0.5-inch or greater rainfall event, soil or weather conditions permitting.

If structures clog, deteriorate, fail, are damaged, require maintenance, or are ineffective, the CIC and construction contractor will ensure that remedial actions are taken within 24 hours, soil or weather conditions permitting.

#### **4.1.2. Graveled Areas**

Areas graveled for stabilization should be inspected to ensure that depressions caused by vehicle traffic are filled and that runoff is not being directed toward wetlands or other receiving waters.

#### **4.1.3. Surface Roughening**

Roughened surfaces should be periodically inspected for rills and washes. Areas exhibiting accelerated erosion will be modified with grade control structures and reseeded and/or revegetated as necessary, or as determined by the BLM Authorized Officer.

### **4.2. Operation and Maintenance Phase**

After construction and reclamation, monitoring of the erosion control mitigation measures will continue on an annual basis according to the monitoring provisions identified by the BLM, during the operation and maintenance phase, until affected soils have been stabilized so that there is no accelerated erosion or minimal accelerated erosion, and until reclamation efforts are considered complete and successful.

**APPENDIX A7: HAZARDOUS MATERIALS  
MANAGEMENT GUIDELINES**

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## 1. INTRODUCTION

Hazardous materials management guidelines for the project are intended to reduce the risks associated with the use, storage, transportation, production, and disposal of hazardous materials, including hazardous substances and waste. These guidelines address spill prevention, response, and cleanup procedures for the project, and provide a template for the development of a more detailed Hazardous Materials Management Plan. If necessary, they could also provide a template for the development of a Spill Prevention Control and Countermeasures (SPCC) Plan, to be developed by the construction contractor, which will identify specific legal requirements and practices to achieve these goals.

The Hazardous Materials Management Plan will clearly identify which legal requirements apply to specific types of hazardous materials; and will identify best management practices that, although not legally required, will be followed to reduce risks associated with hazardous materials. Nothing in these guidelines or in the Hazardous Materials Management Plan shall be construed as an admission regarding the legal applicability of requirements or practices to any particular class of hazardous material.

The term "hazardous materials," as presented in these guidelines, will refer to hazardous substances, hazardous waste, marine pollutants, elevated temperature materials, and materials designated as hazardous for transportation as defined in 49 CFR 171.8.

### 1.1. Purpose

The goals of these guidelines are to: (1) minimize the potential for a spill of fuel or other hazardous materials; (2) contain any spillage to the smallest possible area; (3) protect areas that are environmentally sensitive; and (4) provide a template for the development of a more detailed Hazardous Materials Management Plan (to be developed by the construction contractor). These guidelines include the following components:

- guidelines for the development of the Hazardous Materials Management Plan
- spill prevention procedures related to the transportation, storage, and disposal of hazardous materials
- spill control, response, and cleanup methods
- an overview of the notification and documentation procedures to be followed in the event of a spill
- operation and maintenance considerations

In addition, sample hazardous materials management forms (that may be used as examples by the construction contractor) are provided at the end of this appendix.

In general, hazardous materials, hazardous waste, and cleanup equipment will be stored in approved containers until they can be properly transported and disposed of at an approved treatment, storage, and disposal facility (TSDF). Persons responsible for handling or transporting hazardous materials for this project will be trained in the proper use/management of the materials and should be familiar with all applicable laws, policies, procedures, and mitigation measures related to such handling or transportation.

## **1.2. Regulatory Compliance**

Major legislation pertaining to hazardous materials includes the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); the Resource Conservation and Recovery Act (RCRA); and the Clean Air Act (CAA) and the CWA.

Numerous other federal, state, and local regulations also govern the use, storage, transport, production, and disposal of hazardous materials. Some of the key requirements of these laws are outlined in:

### **1.2.1. Occupational Safety and Health Administration (29 CFR 1900-1910)**

- 28 CFR 1900-1910 Occupational Safety and Health Act
- 29 CFR 1904 Recording and Reporting Occupational Injuries and Illness
- 29 CFR 1910.1200 Hazard Communication
- 29 CFR 1926 Safety and Health Regulations for Construction

### **1.2.2. Clean Water Act (40 CFR 100-149)**

- 40 CFR 110 Discharges of Oil
- 40 CFR 112 Oil Pollution Prevention
- 40 CFR 116 Designation of Hazardous Substances
- 40 CFR 117 Determination of Reportable Quantities for Hazardous Substances
- 40 CFR 122 The National Pollutant Discharge Elimination System (NPDES) Permit Program
- 40 CFR 125 Criteria and Standards for the NPDES
- 40 CFR 129 Toxic Pollutant Effluent Standards
- 40 CFR 131 Water Quality Standards
- 40 CFR 141 – 149 Safe Drinking Water Act

### **1.2.3. Clean Air Act (40 CFR 50-99)**

- 40 CFR 50 National Ambient Air Quality Standards
- 40 CFR 61-63 National Emissions Standards for Hazardous Air Pollutants

### **1.2.4. Toxic Substances Control Act (40 CFR 700-799)**

- 40 CFR 710 Toxic Substances Control Act Chemical Inventory Regulations
- 40 CFR 761 PCBs Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions

### **1.2.5. CERCLA/Superfund Amendments and Reauthorization Act (40 CFR 300-399)**

- 40 CFR 300 National Oil and Hazardous Substances Pollution Contingency Plan
- 40 CFR 302 Designation, Reportable Quantities, and Notification
- 40 CFR 355 Emergency Planning and Notification
- 40 CFR 370 Hazardous Chemical Reporting: Community Right-to-Know

- 40 CFR 372 Toxic Chemical Release Reporting: Community Right-to-Know

#### **1.2.6. Solid and Hazardous Wastes (40 CFR 239-299)**

- 40 CFR 201-211 Noise Abatement Programs
- 40 CFR 243 Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste
- 40 CFR 260 Hazardous Waste Management System: General
- 40 CFR 261 Identification and Listing of Hazardous Waste
- 40 CFR 262 Standards Applicable to Generators of Hazardous Waste
- 40 CFR 263 Standards Applicable to Transporters of Hazardous Waste
- 40 CFR 273 Standards for Universal Waste Management
- 40 CFR 279 Standards for the Management of Used Oil

#### **1.2.7. Hazardous Materials Transportation Act (49 CFR 100-199)**

- 49 CFR 130 Oil Spill Prevention and Response Plans
- 49 CFR 171 General Information, Regulations, and Definitions
- 49 CFR 172 Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements
- 49 CFR 177 Carriage by Public Highway

#### **1.2.8. Arizona Specific Regulations**

- Arizona Revised Statutes (ARS) Title 49, Chapter 2 Water Quality Control, Compliance, and Enforcement
- ARS Title 49 Chapter 3, Air Quality Control
- ARS Title 49 Chapter 5, Hazardous Waste Permitting, Compliance; and ARS Title 49 Environmental Requirements
- ARS Title 40, Article 6.4 High Voltage Power Lines and Safety Requirements

## **2. GUIDELINES FOR DEVELOPING THE HAZARDOUS MATERIALS MANAGEMENT PLAN**

The following sections provide specific guidelines for the construction contractor to prepare the Hazardous Materials Management Plan and the SPCC Plan, if required. The construction contractor shall provide all information requested in the forms (found at the end of this appendix) to the Proponent. In addition, the construction contractor shall complete any other required county, state, or federal forms.

### **2.1. Certifications, Acknowledgments, and Designation of Coordinator/Responsible Person**

#### **2.1.1. Certifications**

The construction contractor shall certify that all of the information provided in the Hazardous Materials Management Plan is accurate and complete, to the best of his knowledge. The

construction contractor shall also certify that they are committed to implementing the plan as written. If an SPCC plan is required, per the requirements of 40 CFR Part 112, the construction contractor shall have the plan reviewed and certified by a registered professional engineer.

#### **2.1.2. Amendments**

The construction contractor shall agree to make all necessary and appropriate amendments to the Hazardous Materials Management Plan, and submit any and all such amendments to the Proponent and the appropriate county (if required), state, or federal authorities within 7 days of finding that an amendment is necessary.

Amendments to the Hazardous Materials Management Plan shall be necessary under any of the following circumstances:

- applicable laws or regulations are revised
- a 100 percent or more increase of a previously disclosed hazardous material
- any handling of a previously undisclosed hazardous material subject to inventory requirements
- a change in formulation of a previously disclosed material (e.g., solid to liquid)
- a change of business address, name, or ownership
- the list of emergency coordinators changes
- the list of emergency equipment changes

The construction contractor may be required to amend any SPCC Plan, as required by the applicable regulations.

#### **2.1.3. Responsible Person**

The construction contractor shall identify an emergency coordinator responsible for hazardous materials management and emergency response. Two alternates shall also be identified. Business, residential, and cellular or pager telephone numbers shall be provided for all three persons, as necessary, to allow for contact on a 24-hour basis. Primary and alternate emergency response coordinators shall be knowledgeable of the chemicals and processes involved in construction of the project, and will have the authority to commit construction contractor resources toward implementation of the plan. They also shall have stop-task authority in case of noncompliance or danger to human health or the environment.

### **2.2. Facilities Description and Inventory of Material**

#### **2.2.1. Site Map**

The construction contractor will provide a site map/facility map in the Hazardous Materials Management Plan that contains material yards, which indicates storage and safety precautions for hazardous materials and hazardous wastes. All maps must be provided on standard 8½ x 11-inch paper. The construction contractor's site map shall, at a minimum, indicate the following:

- orientation and scale
- total land area in square feet

- access and egress points
- buildings and/or temporary trailers
- parking areas
- adjacent land uses (if business, indicate business name)
- surrounding roads, storm drains, and waterways (including streams and wetlands)
- locations of hazardous materials and hazardous waste storage
- underground and aboveground tanks
- containment or diversion structures (dikes, berms, retention ponds)
- shutoff valves and/or circuit breakers
- location of emergency response materials and equipment
- location of material safety data sheets (MSDS) and Hazardous Materials Management Plan, and the Spill Prevention Plan
- location of emergency assembly area

### **2.2.2. Inventory**

The construction contractor shall provide a complete inventory of all hazardous materials that meet reportable quantities, and shall be responsible for consulting with the relevant agencies if acutely hazardous materials are handled. All inventory forms shall be provided to the Proponent by the construction contractor as a part of their Hazardous Materials Management Plan.

## **3. SPILL PREVENTION PROCEDURES**

Construction, operation, and maintenance of the project will require the use of certain potentially hazardous materials such as fuels, oils, explosives, and herbicides. By definition, hazardous materials (substances and wastes) have the potential to pose a significant threat to human health and the environment based upon their quantity, concentration, or chemical composition. When stored, used, transported, and disposed of properly (as described below), the risks associated with these materials can be reduced substantially.

### **3.1. Overview of Hazardous Materials Proposed for Use**

The following project-specific measures pertain to all vehicle refueling and servicing activities, as well as the storage, transportation, production, and disposal of hazardous materials/waste. These measures are intended to prevent the discharge of fuels, oils, gasoline, and other harmful substances to waterways, groundwater aquifers, and/or other sensitive resource areas during project construction and maintenance.

Hazardous materials used during project construction may include petroleum products such as gasoline, diesel fuel, and hydraulic fluid; lubricating oils and solvents; cleansers; explosives; and other substances. Some of these materials will be used in relatively large quantities at material yards, and in rare instances on the right-of-way to operate and maintain equipment during construction. Explosives will be used for blasting rock where needed to install transmission towers and associated access roads (see Appendix A5 – Blasting Plan Methodology).

Smaller quantities of other materials such as pesticides and fertilizers, paints, and chemicals (i.e., sulfur hexafluoride), may be used during project operation and maintenance. Pesticides and herbicides are hazardous materials and will be used according to labeling. The construction contractor will maintain the inventory of all hazardous materials used; and shall maintain copies of the required MSDS for each hazardous chemical, ensuring that they are readily accessible during each work shift to all employees when they are in their work area(s). The MSDS will provide basic emergency response information for small and large releases of the hazardous materials. In the case that bulk hazardous materials are used, the Emergency Response Guidebook, produced by the U.S. DOT, is an acceptable reference. The construction contractor should have a well-developed Hazardous Material Program in place, and work to use nonhazardous substances in routine construction and maintenance activities to the extent possible.

### **3.2. Refueling and Servicing**

Construction vehicles (trucks, bulldozers, etc.), helicopters, and equipment (pumps, generators, etc.) generally will be fueled and serviced in designated areas at least 100 feet from streams (including intermittent and perennial) and wetlands (including dry or seasonal), to be determined and enforced by the CIC. Refueling locations generally should be flat to minimize the chance of a spilled substance reaching a stream. In most cases, smaller rubber-tired vehicles will be refueled and serviced at local gas stations or material yards. Tracked vehicles typically will be refueled and serviced onsite. In some cases, pickup trucks or tankers will be used to refuel and service construction vehicles on the right-of-way. Every effort will be made to minimize the threat of a fuel spill during refueling and servicing. Fuel/service vehicles will carry sufficient quantities of a suitable absorbent material capable of collecting approximately 20 gallons of spilled materials. In addition, all vehicles will be inspected for leaks prior to being brought onsite, and regularly throughout the construction period.

Washing of construction vehicles, such as concrete trucks, will be allowed only in designated areas at least 100 feet from streams and wetlands (as defined above). Washing areas will be contained with berms/barriers to prevent migration of wastewater and/or sediments into streams and waterways, and waste concrete material will be removed and properly disposed of once it has hardened.

### **3.3. Transportation of Hazardous Materials**

Procedures for loading and transporting fuels and other hazardous materials will meet the minimum requirements established by the U.S. DOT and ADOT as well as other pertinent regulations (including applicable county department of transportations). Prior to transporting hazardous materials, appropriate shipping papers shall be completed. Transportation of hazardous materials should be performed by a hazardous material transport firm, in accordance with U.S. DOT regulations. In addition, the construction contractor will ensure that all handling or packaging of hazardous materials and all paperwork for transport of hazardous materials shall be performed by properly trained personnel, in accordance with U.S. DOT and ADOT regulations.

All hazardous materials used for the project will be properly stored in approved U.S. DOT containers and labeled at all times, including during transportation. Smaller containers will be used onsite to transport needed amounts of hazardous materials to a specific location. Transfer of materials from large to small containers will not be done by hand pouring, but will instead be accomplished using appropriate equipment including pumps, hoses, and safety equipment. These smaller ("service") containers will also be clearly labeled. Special provisions apply to the transportation of explosives (see Appendix A5 – Blasting Plan Methodology).

### **3.4. Storage of Hazardous Materials**

Hazardous materials will be stored only in designated material yards. Material yards will be located at least 100 feet from the edge of perennial and intermittent streams, wetlands (including dry or seasonal), and sensitive areas, and shall be able to contain the single largest quantity/unit stored at any one time, plus 10 percent. If material yards cannot be located at least 100 feet from streams and wetlands because of topographic conditions or space limitations, special precautions will be taken to prevent the spill or release of hazardous materials into the waterway. These precautions will include limiting the quantity and amount of time such materials are stored near waterways, fortifying barriers or providing additional containment between hazardous materials and the waterway, and using trained personnel to monitor activities at the yard. Cleanup materials, including absorbent spill pads and plastic bags, will also be stored in these areas. The construction contractor will specify the appropriate spill kit containing these materials in the Hazardous Materials Management Plan. Hazardous materials will not be stored in areas subject to flooding or inundation.

The construction contractor shall coordinate with the CIC when storage areas cannot be located at least 100 feet from streams and wetlands.

#### **3.4.1. Physical Storage Requirements**

- *Storage Containers:* Containers holding hazardous waste or materials shall be compatible with the waste or materials stored. If the container is damaged or leaks, the waste must be transferred to a container in good condition. The construction contractor shall inspect containers at least weekly to verify the integrity of the containers or the containment systems. Containers used for transportation must comply with the U.S. DOT, and ADOT requirements.
- *Incompatible Materials:* Materials, including hazardous waste, shall not be placed in containers if they previously held an incompatible material.
- *Ignitable or Reactive Materials:* Materials or wastes that may ignite or are reactive must be located at least 50 feet from the material yard's property line. "NO SMOKING" signs shall be conspicuously placed wherever there is a hazard from ignitable or reactive material.
- *Container Management:* Containers holding hazardous waste shall be kept closed during transfer and storage, except when it is necessary to add or remove contents. Before the



handling and/or transportation of containers carrying hazardous wastes, the containers should be inspected to ensure that they are sealed such that no material spillage occurs.

- *Secondary Containment*: Secondary containment will consist of bermed or diked areas that are lined and capable of holding 110 percent of the volume of the stored material, and shall be provided for liquid hazardous materials stored onsite.
- *Security*: Hazardous wastes and materials will be stored in secure areas to prevent damage, vandalism, or theft. All storage containers shall remain sealed when not in use, and storage areas shall be secured (gated, locked, and/or guarded) at night and/or during nonconstruction periods.
- *Explosives*: Storage of explosives is discussed in Appendix A5 – Blasting Plan Methodology.

### 3.4.2. Container Labeling Requirements

The construction contractor shall comply with the following labeling requirements for any container (including tanks) used onsite to store accumulated hazardous wastes. Figure A7-1 shows an example of a hazardous waste label for on-site storage. The containers shall be labeled with the information below and as required in 40 CFR 262.31:

- words: "Hazardous Waste"
- composition and physical state of the wastes
- accumulation start date and/or the date the 9-day storage period began
- warning words indicating the particular hazards of the waste, such as: flammable, corrosive, or reactive
- name and address of the facility that generated the waste
- contact person and telephone number

HAZARDOUS WASTE	
Contents:	_____
Physical State (gas, liquid, solid):	_____
Accumulation Start Date:	_____
Hazards:	_____
Name and Address of Generator:	_____
	_____
Contact Person:	_____
Telephone:	_____
HANDLE WITH CARE!	
CONTAINS HAZARDOUS OR TOXIC WASTES	

Figure A7-1. Sample Hazardous Waste Label for Onsite Storage

### 3.5. Disposal of Hazardous Wastes

Hazardous waste will be collected regularly and disposed of in accordance with all applicable laws and regulations. The construction contractor shall determine details on the proper handling

and disposal of hazardous waste, and shall assign responsibility to specific individuals prior to construction of the project.

Every effort will be made to minimize the production of hazardous waste during project construction including, but not limited to, minimizing the amount of hazardous materials needed for the project; using alternative nonhazardous substances when available; recycling usable material such as oils, paints, and batteries to the maximum extent; and filtering and reusing solvents and thinners whenever possible.

Any generator of hazardous waste (except households) must apply for an Environmental Protection Agency Identification Number; this number is needed to complete the Uniform Hazardous Waste Manifest to ship wastes offsite. A generator can store hazardous wastes onsite for a period of up to 90 days, without having to obtain a permit as a storage facility.

### **3.6. Contaminated Containers**

Containers that once held hazardous materials or hazardous waste must be considered as potential hazardous waste, due to possible presence of residual hazardous material. If certain requirements are met, as specified in regulations and listed below, the empty container can be handled as a nonhazardous waste.

- The containers must be empty (as much of the contents as possible have been removed), using the practices commonly employed to remove materials from that type of container (e.g., pouring, pumping, and aspirating) so that none will pour out in any orientation.
- A container that held compressed gas is empty when the pressure in the container approaches atmospheric.
- If empty containers are less than 5 gallons, they may be disposed of as nonhazardous solid waste or scrapped.
- If the empty containers are greater than 5 gallons, they must be handled in the following manner:
  - returned to the vendor for reuse
  - sent to a drum recycler for reconditioning
  - used or recycled onsite

All these actions must occur within 1 year of the container being emptied.

### **3.7. Waste Oil Filters**

Used metal canister oil filters can be managed as nonhazardous wastes:

- as long as they are thoroughly drained of “free flowing” oil (oil exiting drop-by-drop is not considered “free flowing”)
- the filters are accumulated, stored, and transferred in a closed, rainproof container
- the filters are transferred for the purposes of recycling
- the filters are notterne-plated (an alloy of tin and lead)

Terne-plated oil filters are a hazardous waste, exhibiting the hazardous characteristic of lead. Terne-plated oil filters that are not recycled must be managed as a hazardous waste.

### **3.8. Used Lubricating Oil**

Lubrication oil is considered used, as listed below:

- any oil that has been refined from crude oil and has been used, and as a result of use has been contaminated with physical or chemical impurities
- any oil that has been refined from crude oil and, as a consequence of extended storage, spillage, or contamination with nonhazardous impurities such as dirt, rags, and water, is no longer useful to the original purchaser
- spent lubricating fluids that have been removed from a bus, truck, automobile, or heavy equipment

Used oil may be a hazardous waste if:

- the concentrations of polychlorinated biphenyls exceed 50 parts per million
- total halogens exceed 1,000 parts per million
- mixed with a hazardous waste

Used oil not being recycled must be managed as a hazardous waste unless it is determined to be nonhazardous through laboratory analysis.

## **4. HAZARDOUS MATERIALS MITIGATION MEASURES**

Because of potential impacts from construction activities, several measures may be necessary to mitigate impacts from hazardous materials. Following are the measures that will be applied to mitigate hazardous materials impacts.

### **4.1. Other Hazardous Materials Mitigation Measures**

- Physical response actions are intended to ensure all spills are promptly and thoroughly cleaned up. However, the first priority in responding to any spill is personal and public safety. Construction personnel will be notified of evacuation procedures to be used in the event of a spill emergency, including evacuation routes. In general, the first person on the scene will:
  - attempt to identify the source, composition, and hazard of the spill
  - notify appropriately trained personnel immediately
  - isolate and stop the spill, if possible, and begin cleanup (if it is safe)
  - initiate evacuation of the area, if necessary
  - initiate reporting actions
- Persons should only attempt to clean up or control a spill if they have received proper training and possess the appropriate protective clothing and cleanup materials. Untrained individuals should notify the appropriate response personnel. In addition to these general measures, persons responding to spills will consult the Emergency Preparedness Plan and

the MSDSs or U.S. DOT Emergency Response Guidebook (to be maintained by the construction contractor[s] onsite during all construction activities), which outlines physical response guides for hazardous materials spills.

- In general, expert advice will be sought to properly clean up major spills. For spills on land, berms will be constructed to contain the spilled material and prevent migration of hazardous materials toward waterways. Dry materials will not be cleaned up with water or buried. Contaminated soils will be collected using appropriate machinery, stored in suitable containers, and properly disposed of in appropriately designated and approved areas offsite. After contaminated soil is recovered, all machinery used will be decontaminated, and recovered soil will be treated as hazardous waste. Contaminated cleanup materials (absorbent pads, etc.) and vegetation will be disposed of in a similar manner. For spills, cleanup may be verified by sampling and laboratory analysis at the discretion of the Proponent.
- If spilled materials reach water, appropriate materials such as booms and skimmers will be used to contain and remove contaminants. Other actions will be taken, as necessary, to clean up contaminated waters. If construction activity occurs within a wetland with standing water or a flowing stream prior to construction, absorbent booms will be placed on the water surface either around or downstream of the construction zone. For example, during construction of a stream crossing, an absorbent boom would be placed in a flowing stream just downstream of the construction site. In addition to this measure, cleanup materials, including absorbent spill pads and plastic bags, will be placed onsite at flowing streams and "wet" wetlands when construction is occurring within 100 feet of these areas (see also Appendix E – Stormwater Pollution Prevention Plan Framework).

## **5. SPILL CONTROL AND COUNTERMEASURES**

The following section outlines the physical and procedural steps to be taken in the event of a spill to be included in conjunction with any countermeasures identified in the SPCC, if applicable. In general, the construction contractor will oversee all cleanup activities, including providing necessary materials and labor, and performing all reporting and documentation as required. All spills, regardless of quantity, will be reported to the CIC. The responsibilities of the CIC are defined in Section 2.1.3 and Appendix A9 of this POD.

### **5.1. Physical and Procedural Response Measures**

Physical response actions are intended to ensure that all spills are promptly and thoroughly cleaned up. However, the first priority in responding to any spill is personal and public safety. Construction personnel will be notified of evacuation procedures to be used in the event of a spill emergency, including evacuation routes. In general, the first person on the scene will:

- attempt to identify the source, composition, and hazard of the spill
- notify appropriately trained personnel immediately
- isolate and stop the spill if possible, and begin cleanup (i.e., if it is safe)
- initiate reporting actions
- initiate evacuation of the area if necessary

Persons should only attempt to clean up or control a spill if they have received proper training and possess the appropriate protective clothing and cleanup materials. Untrained individuals should proceed first by notifying the appropriate response personnel. In addition to these general guidelines, persons responding to spills will consult the Emergency Preparedness Plan and the MSDS or U.S. DOT Emergency Response Guidebook (to be maintained by the construction contractor[s] onsite during all construction activities), which outlines physical response guidelines for hazardous materials spills.

In general, expert advice will be sought to properly clean up major spills. For spills on land, berms will be constructed to contain the spilled material and prevent migration of hazardous materials toward waterways. Dry materials will not be cleaned up with water or buried. Contaminated soils will be collected using appropriate machinery, stored in suitable containers, and properly disposed of in appropriately designated and approved areas offsite. After contaminated soil is removed, all machinery used will be decontaminated, and removed soil will be treated as hazardous waste. Contaminated cleanup materials (absorbent pads, etc.) and vegetation will be disposed of in a similar manner. For major spills, cleanup may be verified by sampling and laboratory analysis, at the discretion of the Proponent.

If spilled materials reach water, appropriate materials such as booms and skimmers will be used to contain and remove contaminants. Other actions will be taken as necessary to clean up contaminated waters. If construction activity occurs within a wetland with standing water or a flowing stream, prior to construction, absorbent booms will be placed on the water surface either around or downstream of the construction zone. For example, during construction of a stream crossing, an absorbent boom would be placed in a flowing stream just downstream of the construction site. In addition to this measure, cleanup materials including absorbent spill pads and plastic bags will be placed onsite at flowing streams and "wet" wetlands when construction is occurring within 100 feet of these areas (see also Appendix E – Storm Water Pollution Prevention Plan Methodology).

#### **5.1.1. Onsite Equipment**

The construction contractor is responsible for designating locations and contents of spill kits to be used during project construction. The following guidance is provided in developing the contents of a spill kit. The location and minimum inventory for each spill kit must be documented in the Hazardous Materials Management Plan.

Emergency spill response kits will be maintained at all locations where hazardous materials are stored, in sufficient quantities based on the amount of materials stored onsite. Spill response equipment must be compatible with types of materials stored onsite, and should be inventoried regularly to ensure the equipment is adequate for the type and quantities of materials being used. The following are examples of spill response equipment for use in cleanup situations:

- shovels
- absorbent pads/materials
- personal protective gear
- medical first-aid supplies
- bung wrench (nonsparking)
- phone list with emergency contact numbers

- storage containers
- communications equipment

In addition, radios or other communication equipment will be maintained in construction vehicles and other easily accessible locations. Additional cleanup materials may be required, as specified in the SPCC Plan.

## **5.2. Employee Spill Prevention/Response Training and Education**

The construction contractor and subcontractors shall provide spill prevention and response training to appropriate construction personnel (see Occupational Safety and Health Act requirements in Arizona [29 CFR Sec. 1910.1200]). Persons accountable for carrying out the procedures specified herein will be designated prior to construction and informed of their specific duties and responsibilities, with respect to environment compliance and hazardous materials. The training shall inform appropriate personnel of site-specific environmental compliance procedures, and should be completed at least once a year. All training events should be documented, including the date and names of personnel in attendance. These records shall be maintained with the SPCC Plan and/or Hazardous Materials Management Plan. At a minimum, this training shall include the following:

- an overview of regulatory requirements
- methods for the safe handling/storage of hazardous materials
- spill prevention procedures
- emergency response procedures
- use of personal protective equipment
- use of spill cleanup equipment
- procedures for coordinating with emergency response teams
- procedures for notifying agencies
- procedures for documenting spills
- identification of sites/areas requiring special treatment, if any

## **6. NOTIFICATION AND DOCUMENTATION PROCEDURES**

Notification and documentation procedures for spills that occur during project construction, operation, or maintenance will conform to applicable federal, state, and local laws and regulations. Adherence to such procedures will be the top priority once initial safety and spill response actions have been taken. The following sections describe the notification and documentation procedures, and should be implemented in conjunction with the response procedures listed in the Hazardous Materials Management Plan.

### **6.1. Required Notification**

Notification will begin as soon as possible after discovery of a spill. The individual who discovers the spill will contact the CIC. If the construction contractor determines that the spill may seriously threaten human health or the environment, he/she will orally report the discharge as soon as possible, but no later than 24 hours from the time they become aware of the circumstances, as directed below. A written report must be submitted to the ADEQ within 10

days. Prior to initiating notification, the construction contractor (or individual initiating notification) should obtain as much information as possible (see Table A7-1 for standard information requested by agencies).

The following mandatory notifications will be made by the construction contractor.

- The Arizona Emergency Response Commission through the Arizona Department of Environmental Quality Emergency Response Unit, 602-771-2330 (24-hour number).
- The National Response Center at 800-424-8802 (24-hour number).

The construction contractor will verify and update these emergency phone numbers before and during construction. In addition, the construction contractor (or other person in charge) will notify the CIC of all spills or potential spills within construction areas.

When a spill poses a direct and immediate threat to health and safety and/or property, the BLM and landowners potentially affected by a spill will be notified directly by the construction contractor. Immediate notification is required for all situations in which the spill poses a direct and immediate threat to health and safety and/or property. Failure to report a spill could result in substantial penalties and fines (up to \$25,000 per day).

<b>Table A7-1. Standard Spill Information Requested by Agencies</b>	
<b>When notifying a regulatory agency, the following information should be provided:</b>	
<input type="checkbox"/>	current threats to human health and safety; include known injuries, if any
<input type="checkbox"/>	spill location, including landmarks and nearest access route
<input type="checkbox"/>	reporter's name and phone number
<input type="checkbox"/>	time and spill occurred
<input type="checkbox"/>	type and estimated amount of hazardous materials involved
<input type="checkbox"/>	potential threat to property and environmental resources, especially streams and waterways
<input type="checkbox"/>	status of response actions

#### **6.1.1. Reporting Criteria**

The construction contractor and subcontractors are required to report all hazardous materials spills to the CIC. The following reporting criteria apply for petroleum product releases:

- greater than 25 gallons of petroleum products released to land surface
- any petroleum release in or on the groundwater
- greater than 3 cubic yards of petroleum contaminated soil discovered during any subsurface activity
- any release to surface water

The reportable quantities for hazardous substances are based on Federal Environmental Protection Agency guidelines established under 40 CFR 302.

## **6.2. Documentation**

The construction contractor will maintain records for all spills. State and federal agencies that have been verbally notified of a spill will be informed in writing within 10 days for state agencies and 30 days for federal agencies.

The construction contractor shall record spill information in a daily log. The following is a list of items that should be included in the daily log (as appropriate, based on the spill incident):

- time and date of each log entry
- name of individual recording log entry
- list of all agencies notified, including name of individual notified, time, and date
- type and amount of material spill
- resources affected by spill
- list of response actions taken, including relative success
- copies of letters, permits, or other communications received from government agencies throughout the duration of the spill
- copies of all outgoing correspondence related to the spill
- photographs of the response effort (and surrounding baseline photographs, if relevant)

Maintaining detailed and organized records during a spill incident is an important and prudent task. One construction contractor representative should be designated to manage the records for an incident. If extensive spill response and cleanup operations are required, the construction contractor may choose to assign an individual to assist in the documentation process. This person will track and manage all expenditures (i.e., equipment, personnel/labor hours, and associated resources) and will help supplement the information provided in the daily log book.

## **7. OPERATIONS AND MAINTENANCE**

During the project's operation and maintenance phase, the Proponent will ensure that its facilities, personnel, and contractors comply with federal, state, and local laws and regulations pertaining to the use, storage, transport, and disposal of hazardous materials and adhere to required emergency response and cleanup procedures in the event of a hazardous material spill. Proponent and all operations and maintenance subcontractors shall develop hazardous materials management and response plans, as well as properly train employees for handling, packaging, and shipping hazardous materials and responding to hazardous materials spills or emergency events.



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**Attachment A7: Sample Hazardous Materials Management Forms**

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**CERTIFICATIONS, ACKNOWLEDGMENTS, AND DESIGNATION  
OF EMERGENCY COORDINATOR**

The construction contractor responsible for managing the material yards shall complete and submit the following information:

**GENERAL INFORMATION**

Business Name \_\_\_\_\_

Facility Street Address \_\_\_\_\_

_____	_____	_____	( )
City	County	Zip Code	Phone

Mailing Address (if different) \_\_\_\_\_

_____	_____	_____	( )
City	County	Zip Code	Phone

**EMERGENCY COORDINATOR**

_____	( )	( )	( )
Primary Emergency Coordinator	Business Phone	24-hour Phone	Pager/Cellular
Phone			

_____	( )	( )	( )
1 <sup>st</sup> Alternate	Business Phone	24-hour Phone	Pager/Cellular
Phone			

_____	( )	( )	( )
2 <sup>nd</sup> Alternate	Business Phone	24-hour Phone	Pager/Cellular
Phone			

\* Certification is only necessary if an SPCC Plan is required (see Section 2.1)

## SPILL PREVENTION, CONTROL, AND COUNTERMEASURE

The construction contractor shall identify all potential sources of potential spills, including tank overflow, rupture, or leakage. If SPCC requirements are applicable, SPCC information must be included for all containers **with a capacity of 55 gallons or greater** that contain oil, including petroleum, fuel oil, sludge, oil refuse, and oil mixed with waste.

(1) Material: \_\_\_\_\_ Total Quantity: \_\_\_\_\_  
Location of use: \_\_\_\_\_  
Potential direction of flow: \_\_\_\_\_ Maximum rate of flow: \_\_\_\_\_  
Structures of equipment to contain spills: \_\_\_\_\_  
\_\_\_\_\_

(2) Material: \_\_\_\_\_ Total Quantity: \_\_\_\_\_  
Location of use: \_\_\_\_\_  
Potential direction of flow: \_\_\_\_\_ Maximum rate of flow: \_\_\_\_\_  
Structures of equipment to contain spills: \_\_\_\_\_  
\_\_\_\_\_

(3) Material: \_\_\_\_\_ Total Quantity: \_\_\_\_\_  
Location of use: \_\_\_\_\_  
Potential direction of flow: \_\_\_\_\_ Maximum rate of flow: \_\_\_\_\_  
Structures of equipment to contain spills: \_\_\_\_\_  
\_\_\_\_\_

(4) Material: \_\_\_\_\_ Total Quantity: \_\_\_\_\_  
Location of use: \_\_\_\_\_  
Potential direction of flow: \_\_\_\_\_ Maximum rate of flow: \_\_\_\_\_  
Structures of equipment to contain spills: \_\_\_\_\_  
\_\_\_\_\_

## EMERGENCY CHECKLIST

**\*\* DIAL 911 FOR EMERGENCY RESPONSE \*\***

Emergency Coordinator:	( )	( )
	(day phone)	(night phone)
First Alternate:	( )	( )
	(day phone)	(night phone)
Second Alternate:	( )	( )
	(day phone)	(night phone)

Contractor

Telephone Number

Address

### EMERGENCY NUMBERS

**Emergency Response (Ambulance, Fire, Police, Sheriff, Arizona Department of Public Safety) 911**

**Poison Control Center (800) 222-1222**

**Nearest Hospitals (2)** \_\_\_\_\_ Phone: ( )

\_\_\_\_\_ Phone: ( )

**Cleanup Contractor** \_\_\_\_\_ Phone: ( )

**Other (specify)** \_\_\_\_\_ Phone: ( )

**AGENCY NOTIFICATIONS** (to be made by the Proponent's environmental manager or environmental field supervisor or emergency response coordinator)

**Arizona Division of Emergency Management** 1-800-411-2336

**Arizona Division of Environmental Protection** 602-771-2300 or  
800-234-5677

**National Response Center** (800) 424-8802

**Other (specify)** \_\_\_\_\_ : Phone: ( )

**Other (specify)** \_\_\_\_\_ : Phone: ( )

[Note: The construction contractor shall verify and update the emergency numbers on this page before and during project construction.]

## WEEKLY HAZARDOUS MATERIALS/WASTE INSPECTION LOG

For each item listed below, the construction contractor shall indicate whether existing conditions are acceptable (A) or unacceptable (U). Resolution of all unacceptable conditions must be documented. The construction contractor shall inspect all storage facilities on a regular basis, but not less than weekly. The construction contractor shall keep records of all inspections on file.

### I. STORAGE AREAS FOR FUELS, LUBRICANTS, AND CHEMICALS

#### General

A/U

- ☐ Material yard and storage areas secured
- ☐ National Fire Protection Association symbol posted in storage area or at material yard entrance
- ☐ Storage areas properly prepared and signed
- ☐ No evidence of spilled or leaking materials
- ☐ Incompatible materials separated
- ☐ All containers labeled properly
- ☐ All containers securely closed
- ☐ All containers upright
- ☐ No evidence of container bulging, damage, rust, or corrosion
- ☐ Material Safety Data Sheets available
- ☐ Hazardous Materials Management and Spill Prevention Plan available

#### Secondary Containment Areas

A/U

- ☐ Containment berm intact and capable of holding 110 percent of material stored
- ☐ Lining intact
- ☐ No materials overhanging berms
- ☐ No materials stored on berms
- ☐ No flammable materials used for berms

#### Compressed Gases

A/U

- ☐ Cylinders labeled with contents
- ☐ Cylinders secured from falling
- ☐ Oxygen stored at least 25 feet away from fuel
- ☐ Cylinders in bulk storage are separated from incompatible materials by fires, barriers, or by appropriate distance

## **II. HAZARDOUS WASTE MANAGEMENT**

### **Waste Container Storage**

**A/U**

- ☐ No evidence of spilled or leaking wastes
- ☐ Adequate secondary containment for all wastes
- ☐ Separate containers for each waste stream – no piles
- ☐ Waste area not adjacent to combustibles or compressed gases
- ☐ All containers securely closed
- ☐ Bungs secured tightly
- ☐ Open-top drum hoops secured
- ☐ All containers upright
- ☐ No evidence of container bulging, corrosion
- ☐ No severe container damage or rust
- ☐ Containers are compatible with waste (e.g., plastic liner for corrosives, metal liner for solvents)
- ☐ No smoking and general danger/warning signs posted

### **Waste Container Labeling**

**A/U**

- ☐ Containers properly labeled
- ☐ Name, address, and Environmental Protection Agency ID number or ID Number of generator listed
- ☐ Accumulation start date listed
- ☐ Storage start date listed
- ☐ Chemical and physical composition of waste listed
- ☐ Hazardous properties listed

### **Nonhazardous Waste Areas**

**A/U**

- ☐ No litter in material yard
- ☐ No hazardous wastes with trash (e.g., contaminated soil, oily rags, or other oily materials)
- ☐ Empty oil and aerosol containers for disposal as non-hazardous waste are completely emptied

**III. EMERGENCY RESPONSE EQUIPMENT**

**A/U**

- \_\_\_\_\_ Shovels
- \_\_\_\_\_ Absorbent material
- \_\_\_\_\_ Personal protective equipment (Tyvek suit, gloves, goggles and booties, as appropriate)
- \_\_\_\_\_ Fire-fighting equipment
- \_\_\_\_\_ First aid supplies (e.g., medical supplies, squeeze bottle eye wash)
- \_\_\_\_\_ Communication equipment
- \_\_\_\_\_ Bung wrench (nonsparking)

**IV. CORRECTIVE ACTIONS TAKEN (required for all unacceptable conditions)**

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**Date:** \_\_\_\_\_ **Company (print):** \_\_\_\_\_

**Inspected by (print):** \_\_\_\_\_

**Signature:** \_\_\_\_\_

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**APPENDIX A8: EMERGENCY PREPAREDNESS  
AND RESPONSE PLAN GUIDELINES**

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## **1. INTRODUCTION**

Emergency Preparedness and Response Plan Guidelines are intended to provide an overview of methods to be implemented, should the need for emergency management become necessary. The existing support structure, chain of command, and emergency communications protocols discussed herein are to be used as a guide for this Plan, to be completed by the Proponent's construction contractor and approved by the BLM. Specific emergency procedures for fire, blasting, and hazardous materials are included in Appendices A4 – Fire Protection Plan, A5 – Blasting Plan Methodology, and A7 – Hazardous Materials Management Plan.

Emergency response procedures will be implemented for the following potential events, or similar events:

- downed transmission lines, structures, or equipment failure
- fires
- sudden loss of power
- natural disasters
- serious personal injury

### **1.1. Purpose and Need**

The purpose of an Emergency Preparedness and Response Plan is to provide clear procedures and information that will enable the Proponents, construction contractor, the CIC, and BLM Authorized Officer to prepare for and effectively respond to emergency situations. The primary objective of the Emergency Preparedness and Response Plan is to prevent adverse impacts to human health and safety, property, and the environment that could potentially occur as a result of the construction, operation, and maintenance of the Project.

### **1.2. Regulatory Compliance**

Health and safety guidelines related to high-voltage transmission lines are provided by a number of sources, including the NESC, American National Standards Institute, American Medical Association Council on Scientific Affairs, American Conference of Governmental Industrial Hygienists, Occupational Safety and Health Administration, various state regulations, and other organizations.

## **2. RESPONSIBILITIES**

The Proponent and the construction contractor are responsible for the effective response to any emergency situation or event related to the construction, operation, and maintenance of the project. In order to ensure a coordinated and effective response, a chain of command will be developed as part of the Emergency Preparedness and Response Plan, and followed in the event of an emergency.

### **3. RESPONSE COORDINATION**

The amount of resources and coordination required for response to a specific hazard or emergency is determined by type, severity, location, and duration of the event. Most events require management at the field operations level, and an increase of resource requirements to match the severity and duration of the event. This emergency management organization will be included as part of the Emergency Preparedness and Response Plan.

In the event of an emergency, crews will be dispatched quickly to repair or replace any damaged equipment. Repair of the transmission line will have priority under emergency conditions, and all reasonable efforts will be made to protect plants, wildlife, and other resources. Reclamation procedures following completion of repair work will be similar to those prescribed during construction.

### **4. EMERGENCY COMMUNICATIONS**

Effective communication and exchange of information is essential in every emergency response. Misdirected, incorrect, or untimely information can be detrimental and even increase the threat to life or property. As an emergency event escalates, the rapid increase of information creates chaos and confusion. Simple communication diagrams can help to alleviate this situation.

#### **4.1. Emergency Contact List**

In case of emergency, call 911 first. Additional potential emergency contacts are listed in Table A8-1 and should be called, as appropriate, depending on the situation (e.g., fire, injury). Further guidance on emergency response, notification, and reporting protocols are included in Appendix A4 – Fire Protection Plan, Appendix A5 – Blasting Plan Methodology, and Appendix A7 – Hazardous Materials Management Plan.

This Emergency Contact List shall be verified at the beginning of project construction and updated throughout its duration by the construction contractor, to ensure accurate contact information.

### **5. HAZARD IDENTIFICATIONS AND KEY RESPONSE CRITERIA**

The right-of-way corridor for the project can pose potential hazards or threats in association with construction activities. The most effective response to any situation is awareness of the hazard, its potential effects and consequences, and an understanding of the resources and actions necessary to respond. It would be unreasonable to list all the potential hazards and detail each response. Responses to different events may vary as the event evolves, but response methods and responsibilities to be determined in the Emergency Preparedness and Response Plan will be essential for any possible situation.

Effective Emergency Response training is based on plausible scenarios and then developing the understanding, elements, and actions necessary to respond. Scenarios to consider include electrocution, fatality, massive equipment failure, structure failure, and weather/environment.

Table A8-1. Emergency Contact List		
IN CASE OF EMERGENCY Call 911		
FIRE – Call 911 First		
Lower Sonoran BLM Field Office Call: (623) 580-5500		
COUNTY SHERIFF		
Maricopa County Sheriff: Joe Arpaio (602) 876-1011		
POISON CONTROL		
National: (800) 222-1222 Provides connection to counties		
HOSPITALS AND CLINICS		
Maricopa County Hospital: 2601 East Roosevelt Street Phoenix, AZ 85008 (602) 344-5011	West Valley Hospital: 13677 West McDowell Road Goodyear, AZ 85395 (623) 882-1500	
HAZARDOUS SPILL RESPONSE AND NOTIFICATION – Call 911 Directly after 911 notification, the following mandatory notifications will be made by CIC. Select and notify the appropriate government agency based on geographic location of the spill site. Also see Appendix A7 – Hazardous Materials Management Plan.		
Arizona Division of Emergency Management 24 Hours 7 Days Statewide: 1-800-411-2336		
Arizona Hazardous Waste Management: (non-emergency) Inspections and Compliance (602) 390-7894	National Response Center: (800) 424-8802	
BUREAU OF ALCOHOL, TOBACCO, AND FIREARMS OFFICES		
Phoenix Field Division: 201 E. Washington Street, Suite 940 Phoenix, Arizona 85004 USA (602) 776-5400		
OTHER NUMBERS		

This Emergency Contact List shall be verified at the beginning of construction and updated throughout the project by the construction contractor to ensure accurate contact information.

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**APPENDIX A9: ENVIRONMENTAL COMPLIANCE  
MANAGEMENT PLAN**

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## **1. INTRODUCTION**

The BLM will be responsible for enforcement of the terms and conditions of its right-of-way grant on federal land during the term of the grant. As the lead federal agency, the BLM will approve a third-party CIC to act on its behalf, providing construction oversight and ensuring compliance with the terms and conditions of the right-of-way grant. However, where access is allowed on nonfederal land, the BLM's CIC will document construction activities and disturbances of the project on all lands analyzed in the EA and CEC. Additional federal, state, and local permits, as well as private landowner agreements that include conditions to construct and operate the project, will also be acquired. Because of the project's potential to impact sensitive environmental resources, required mitigation plans have been developed to minimize these potential impacts.

Project construction requirements and conditions are outlined in the approved plans (including this project's POD), permits, and right-of-way grants issued for the project. Their proactive implementation will facilitate timely and efficient construction of the project, while minimizing impacts on environmental resources. The terms and requirements of project permitting and the related documents described above are specified in Section 1 and the appendices of the POD.

## **2. ENVIRONMENTAL COMPLIANCE MANAGEMENT PLAN ELEMENTS AND AUTHORITY**

This ECMP describes how the Proponent will uphold, document, and manage environmental compliance with the terms specified in the right-of-way grant, POD, land owner agreements, and all federal, state, and local permits. It is a centralized project environmental compliance reference, intended to facilitate compliance across the entire project, and describes the following essential elements:

- roles and responsibilities of the participants
- comprehensive inspection and monitoring program
- corrective procedures in the event of noncompliance
- standard protocol for variance requests
- communication plan
- reporting process
- comprehensive project-specific environmental compliance training program

The Proponent's commitment to environmental compliance will be demonstrated by activities prior to, during, and following construction. As with the rest of the POD, the ECMP is intended to be a living document that may be revised as needed throughout the construction process. Because the project will cross federal and state lands, as well as lands that are owned privately and/or under the jurisdiction of multiple agencies, the ECMP will be applicable for multiple jurisdictional permitting entities and landowners.

Authority for implementation of this ECMP originates from the terms and conditions of the BLM's right-of-way grant, POD, EA, CEC, and other conditions associated with nonfederal agency permits. As part of the Proponent's environmental compliance commitment, the

construction contractor will be contractually bound to comply with all laws, regulations, and permit requirements, including the mitigation measures and other specific stipulations and methods set forth in the POD, CEC, and other permits.

Project-specific permitting documents, including but not limited to those identified above, must be reviewed prior to any construction activities to identify all project-wide and site-specific requirements. These documents will be distributed to the appropriate parties for review, prior to the initial construction kickoff meeting. At that time, a document control system to manage distribution of all documents and revisions will be presented and demonstrated.

As described in Section 2.1.3 of this POD, a third-party CIC will be employed to act on behalf of the BLM to provide on-site compliance inspections and monitoring for the project and promote environmental protection. The CIC will be hired by the Proponent, with the BLM's approval, prior to the BLM offering the right-of-way grant in order to allow adequate time to review documents and develop on-the-ground familiarity with the project.

The Proponent will also engage a team of environmental inspectors to ensure compliance with all permit requirements. The environmental inspectors will be an integral part of the Proponent's overall team and will have complete knowledge of all scheduled construction activities occurring at all times and locations. The environmental inspectors' primary focus will be to make certain that all construction activities in all project segments and phases are performed in accordance with the environmental commitments set forth in the POD, permits, and individual agreements. The inspectors will be of particular importance on nonfederal lands, where the CIC has no authority and, in some cases, may not be allowed to access the project right-of-way. In such cases, in addition to monitoring for environmental compliance with the POD, permits, and individual agreements, the environmental inspectors must document all construction activities and project disturbances that occur at each work area, to be included in the total project disturbance tracking maintained by the CIC (see section 6.1 of this appendix).

Environmental inspectors will be retained by the Proponent, who will then report to the BLM (as indicated in the organizational chart in Attachment A9-1 by the dashed line). Both the BLM and the Proponent will provide direct oversight of the construction contractor's environmental compliance performance, with any specific work direction to the construction contractor coming only from the Proponent. With the exception of stop-work direction due to environmental compliance issues, the CIC will not give any specific work direction to the construction contractor. Additional information regarding the construction contractor's role in this ECMP is explained in section 3.3 of this appendix.

### **3. ROLES AND RESPONSIBILITIES**

The following section describes the minimum roles necessary to facilitate environmental compliance with the terms and conditions of the right-of-way grant and the POD; it is not intended to provide direction for management of the project for the Proponent, construction contractor, or BLM. This section also describes the responsibilities, reporting relationships, and roles in executing the ECMP for each entity involved (see Attachment A9-1: Project Implementation Roles). If other parties become engaged in the project as additional participants, they would be responsible to function and abide by the protocols, terms, and conditions outlined

in this ECMP, and their reporting relationships would be case-specific according to their jurisdiction, expertise, and/or nature of project involvement.

### **3.1. Proponent**

The Proponent will act as holder of all rights-of-way and easements (public and private), and will be the grant holder for the BLM right-of-way. As such, the Proponent is ultimately accountable for adherence to the environmental permit requirements specified in the terms of its agreements and is responsible for ensuring that environmental impacts do not exceed those approved in the Final POD. To facilitate this goal, the Proponent will maintain regular and consistent communication with the CIC, environmental inspectors, and construction contractor to track the success of mitigation and compliance efforts prior to, during, and following construction. As the permit holder, the Proponent is responsible for ensuring that all instances of noncompliance are corrected.

#### **3.1.1. Proponent's Project Manager**

The Proponent's project manager is responsible for all aspects of project execution, completion, and delivery. The Proponent's project manager ensures that effective coordination occurs between the Proponent and the BLM's Authorized Officer, the CIC, and the construction contractor's project manager to verify that environmental compliance meets the requirements of all applicable laws, permits, and agreements.

The Proponent's project manager also informs the construction contractor they are contractually bound to comply with all of the Project's environmental requirements, including the implementation of the ECMP. Typical daily responsibilities of the Proponent's Project Manager will include, but are not limited to:

- Enforcing construction contractor compliance with all environmental laws and regulations, including the right-of-way grant, POD, permits (federal, state, and local), and landowner agreements during project construction
- Managing all Proponent personnel before, during, and after project construction
- Reviewing and evaluating weekly reports
- Reporting environmental compliance violations to the Proponent's project sponsor, as needed
- Reviewing and approving construction contractor's written variance requests for submittal to the CIC
- Delegating authority to approve submittal of construction contractor's variance requests to the BLM as needed

#### **3.1.2. Environmental Compliance Manager**

The Environmental Compliance Manager will be responsible for implementing the overall environmental compliance of the project, as stipulated in the POD on behalf of the Proponent. The Environmental Compliance Manager will have stop-work authority in the event of a violation of the procedures or stipulations identified in the right-of-way grant, POD, permits

(federal, state, and local), and land owner agreements, as well as the authority to make in-the-field decisions for additional environmental avoidance and/or mitigation issues clearly described in the POD, but that may not have been previously identified in the field (e.g., additional plants requiring salvage, additional noxious weed infestations, sensitive species avoidance areas, etc.). Typical daily responsibilities of the Environmental Compliance Manager will include, but are not limited to:

- Regularly inspecting or coordinating the inspection of construction activities for compliance with all environmental laws and regulations, including the right-of-way grant, POD, permits (federal, state, and local), and land owner agreements, during the length of construction for the project
- Managing implementation and completion of all preconstruction and post-construction environmental commitments
- Attending construction meetings, as needed
- Coordinating with the Proponent on a daily basis to communicate potential environmental compliance issues, and to discuss schedule and forecasted monitoring workload based on discussions with the construction contractor and CIC
- Serving as the primary contact and means of communication with the construction contractor, CIC, BLM Authorized Officer, and other agency personnel regarding environmental compliance issues and tracking resolution of issues to completion
- Identifying sensitive resources and areas of concern prior to upcoming construction activities, and coordinating with construction and monitoring personnel accordingly
- Acting as a resource and technical lead to the environmental inspectors
- Acting as a resource to construction personnel and explaining environmental regulations and how they are applied in the field
- Coordinating appropriate corrective actions to resolve noncompliance issues
- Coordinating with environmental inspectors and construction personnel to provide any necessary information and facilitating regular communication among all parties
- Inspecting areas of concern identified by environmental inspectors and making appropriate recommendations to construction personnel
- Coordinating field visits with the construction contractor management and CIC, as necessary
- Communicating with the Lead Environmental Inspector (see Section 3.1.3) and construction contractor (see Section 3.3) on issues needing resolution in the field
- Reviewing daily logs, including photo documentation, from environmental inspectors for completion and accuracy, and communicating action items or follow-up items to appropriate parties
- Compiling daily logs into weekly summary reports; notification of weekly reports will be sent to the appropriate parties (e.g., Environmental Compliance Manager, CIC, construction contractor, BLM Authorized Officer, Proponent, etc.)
- Submitting weekly summaries to the CIC, BLM Authorized Officer, and Proponent, documenting construction activities and compliance issues

- Tracking problem areas and noncompliance reports, and ensuring follow-up and resolution reports are filed
- Documenting the resolution of any compliance issues in daily reports
- Maintaining centralized storage of daily/weekly environmental inspection reports and making reports available at the request of the BLM Authorized Officer
- Reviewing and assisting in preparation of written variance requests
- Ensuring variance requests are complete and accurate prior to submittal to the CIC and/or BLM
- Tracking progress and completion of any required field surveys (biological resources, cultural resources, etc.) and technical reports to support variances
- Tracking variances and communicating variance status with the construction contractor
- Processing and archiving variances

### **3.1.3. Environmental Inspectors**

Environmental inspectors for the project will monitor and report on construction-related activities with respect to the general permit requirements of the BLM (as stipulated in the POD and CEC), Proponent, and other cooperating/permitting agencies; as well as monitor and report on construction-related activities in areas of predetermined biological, cultural, and paleontological sensitive resources. Among the environmental inspectors' primary responsibilities will be to locate and facilitate protection and/or avoidance of environmentally sensitive resources such as migratory bird and raptor nests, rare plants and noxious weeds, high sensitivity paleontological resources, and NRHP-eligible cultural resources, as well as provide monitoring of construction activities for compliance with dust regulations of Maricopa County. In addition, environmental inspectors will monitor and report general environmental compliance by the construction contractor and subcontractors to the Proponent, regarding proper implementation of Section 6, Appendices A1–A7, and Appendix D of the POD, with particular attention to fire, dust, hazardous materials, and restoration guidelines.

While the length and type of construction activities will determine the necessary number of environmental inspectors to facilitate project compliance, each environmental inspector will be retained and assigned to the project according to his resource specialty. Each environmental inspector will oversee the proper implementation of their specialty resource requirements identified in the POD and other environmental documents including, but not limited to, biological resources, cultural resources, paleontological resources, fire, dust, hazardous materials, and restoration requirements, as appropriate.

Upon completion of project facility construction activities, environmental inspectors will monitor the implementation of the appropriate restoration treatments as stipulated by the BLM. The CIC and BLM Authorized Officer must approve site stabilization/restoration, before construction activities are considered complete for the project.

The environmental inspectors will report directly to the Environmental Compliance Manager, and will submit daily detailed monitoring records and photo logs. The environmental inspectors



will be in daily contact with the CIC, under the direction of the Environmental Compliance Manager, to ensure the POD is properly implemented.

Typical daily responsibilities of the environmental inspectors will include, but are not limited to:

- Assisting in inspection of construction activities for compliance with the right-of-way grant, Final POD, permits (federal, state and local), and land owner agreements, for construction of the project
- Conducting daily inspections of construction activities
- Identifying sensitive resources and areas of concern prior to upcoming construction activities, and coordinating with construction personnel to discuss
- Acting as a resource to construction personnel to explain environmental regulations and relevant application to construction activity
- Verifying that construction work areas, access roads, and environmentally sensitive features have been properly marked and flagged before work is initiated in the area
- Ensuring that erosion control or other best management practices do not inadvertently cause impact to other sensitive resources
- Acting as a point of contact for the CIC
- Informing the construction contractor of all potential and existing compliance issues, and coordinating with the Environmental Compliance Manager to determine appropriate corrective actions
- Coordinating with the Environmental Compliance Manager for potential stop-work when construction activities violate the environmental conditions of the right-of-way grant, permits, or landowner conditions
- Identifying, documenting, and overseeing corrective actions to resolve noncompliance issues
- Monitoring and documenting restoration activities
- Documenting the resolution of any compliance issues in daily reports
- Maintaining and submitting daily reports and logs to the Environmental Compliance Manager that document construction activities and associated compliance status for that day
- Documenting the resolution of any compliance issues in daily reports

### **3.2. Bureau of Land Management**

The objective of the BLM is to ensure right-of-way grant compliance during construction, operation, and maintenance phases. The CIC shall represent the BLM in this matter, and ensure environmental impacts do not exceed those analyzed in the EA and CEC, and approved in the POD. The CIC assists the BLM by providing regular and consistent field observations, documenting his findings, processing and approving Minor Variance requests, and working with the Proponent and construction contractor to identify compliance issues and maintain compliance during construction of the project.

### 3.2.1. Authorized Officer

The BLM will serve as the lead federal agency, and will designate a project manager (authorized federal officer) who will provide oversight for the project. The BLM Authorized Officer will be responsible for administering and enforcing the right-of-way grant and permit provisions for the BLM, ensuring that mitigation measures and conditions of approval contained in the POD are adhered to during project construction, operation, and maintenance. The BLM Authorized Officer will be responsible for writing stop-and-resume work orders, and resolving any conflicts that arise relating to the project on land administered by the BLM. Compliance will be monitored by the BLM Authorized Officer and other BLM resource specialists as needed, in conjunction with the CIC.

If any additional environmental compliance oversight representative is required by agencies other than the BLM, their responsibilities would be consistent with those outlined for the BLM and CIC in this ECMP, although their authority and enforcement would be solely applicable in their respective agency's area of jurisdiction.

Typical responsibilities of the BLM Authorized Officer will include, but are not limited to:

- Ultimate authority and decision maker for issues pertaining to the BLM's right-of-way grant
- Enforcing the Proponent's compliance with all environmental laws and regulations, including the right-of-way grant, POD, and federal permits during project construction
- Ensuring that right-of-way grant compliance during construction is done in a manner that facilitates timely and efficient construction, while protecting the public interests and the environment
- Managing the project CIC
- Coordinating with BLM resource specialists for technical expertise and input
- Determining, in coordination with others, if any environmental noncompliance events for which the Proponent is accountable qualify as violations to the terms and conditions of the right-of-way grant
- Informing the Proponent of any right-of-way violations due to environmental noncompliance, and enforcing their remedy
- In accordance with 43 CFR 2807.17(a), suspending or terminating the right-of-way grant if the Proponent and/or its construction contractor does not comply with applicable laws and regulations or any terms, conditions, or stipulations of the grant (e.g., excessive or continuous noncompliance activities that demonstrate a willful disregard for right-of-way grant(s) terms and conditions
- Issuing BLM project decisions
- Compiling or directing others to compile all project reports for the Project Administrative Record
- Authorizing approval of major variances or designating authority to other BLM representatives for approval

### **3.2.2. Compliance Inspection Contractor**

The CIC is an on-the-ground agent of the BLM and other cooperating agencies, retained by the Proponent, who provides on-site compliance inspections and monitoring for the project. This service helps to promote environmental protection and ensures compliance with the lead federal agency's requirements (including any cooperating agency requirements), based on the commitments as established in the POD. The CIC will report directly to the BLM, who will coordinate with other cooperating agencies, where appropriate.

The CIC will work under the direct supervision and control of the BLM Authorized Officer. No direction with respect to time, place, or manner of conducting monitoring shall be taken from the Proponent or construction contractor, provided that the CIC and the Proponent work together to ensure the project's timely and effective construction. If the CIC determines an action is in noncompliance, the CIC has the authority to issue an immediate temporary suspension or work stoppage order (WSO) for that specific work activity. However, all efforts shall be made to coordinate closely with the Proponent and construction contractor to report and document compliance concerns not otherwise identified by these parties, giving them the opportunity to resolve the concerns. Every effort shall be made to limit any work stoppage to situations involving immediate threats to sensitive resources or emergency situations. The CIC is not otherwise authorized to direct work undertaken by the construction contractor. If any additional environmental compliance oversight representative is required by agencies other than the BLM, their responsibilities would be consistent with those outlined for the BLM and CIC in this ECMP, although their authority and enforcement would be solely applicable in their respective agency's area of jurisdiction.

It is not the role of the CIC to direct the work of either the Proponent or the construction contractor. Rather, the CIC's primary role is to observe work activities and bring noncompliant situations to the attention of the appropriate party, and offer recommendations on how to prevent noncompliance.

Typical responsibilities of the CIC will include, but are not limited to:

- Representing the BLM in the field for compliance activities
- Verifying and reporting the Proponent's compliance with all environmental requirements, and tracking all reported noncompliance events and resolutions
- Tracking all project construction disturbance for inclusion in an End of Construction Project Report (see Section 6 of this ECMP)
- Reporting directly to the BLM Authorized Officer (or designee)
- Remaining assigned to the project through completion of construction (including initial restoration activities) or termination of the project, unless redirected by BLM
- Reviewing and understanding the right-of-way grant, POD, and all other project-specific environmental documents (to be delivered upon award of the CIC contract)
- Maintaining copies of the right-of-way grant and POD in their possession while on the right-of-way
- Performing compliance monitoring work in the field and from the CIC's office; at a minimum, the CIC or designated monitors are required to be on the right-of-way when

activities involving the use of construction equipment have the potential for significant surface disturbance or harm to sensitive resources (exceptions can be made should the CIC, using professional judgment, determine that reductions in presence would not adversely impact compliance oversight, such as when onsite activities are minimal)

- Coordinating regular compliance monitoring during construction
- Discussing any potential compliance issues with the construction contractor's staff as soon as possible
- Providing recommendations to the BLM Authorized Officer on ways to resolve or prevent noncompliance issues
- Meeting weekly with the BLM Authorized Officer (or designee), in person or by telephone, to review construction activities and the status of compliance
- Communicating regularly with Proponent and Environmental Compliance Manager
- Coordinating compliance activities with the Proponent and Environmental Compliance Manager
- Coordinating variance requests with the BLM Authorized Officer, Proponent, and Environmental Compliance Manager
- Participating in supplemental meetings, as necessary, with the BLM Authorized Officer and Proponent
- Conducting the final route review and developing final report documenting the status of the right-of-way and the final construction disturbance numbers
- Performing activities as instructed by the BLM Authorized Officer
- Documenting all instances of noncompliance, or other problems that would reasonably be expected to result in environmental impacts, including staking, flagging, or photographing problem areas, verifying locations with GPS, and comparing them to the right-of-way grant and POD map volumes as specified in the ECMP
- Providing weekly summary reports of compliance inspection to the BLM, which shall summarize the prior week's activities and include a brief description of construction activities, compliance issues, any additional acreage disturbed resulting from variances, corrective actions taken, and any foreseeable issues
- Participating in all preconstruction meetings, safety meetings, safety training, environmental training, and other meetings called by the BLM, Proponent, or construction contractor that involve environmental compliance aspects of the project (the CIC is responsible for preparing meeting notes that highlight all decisions made during these meetings)
- Coordinating as necessary with the BLM Authorized Officer to review and approve variance requests
- Authorizing approval of minor variances or designating authority to others, as delegated and approved by the BLM

### **3.3. Construction Contractor**

The construction contractor will be contractually bound to comply with all laws, regulations, and permit requirements, including the mitigation measures and other stipulations and methods set forth in the right-of-way grant, POD, and CEC throughout all phases of the project. All construction personnel will participate in environmental training and work with the Proponent's environmental inspectors to build the project safely and in compliance with the environmental protection measures identified in the POD. Should a noncompliance situation occur, the construction contractor will cooperate with the direction of the CIC and BLM, and will implement a solution as quickly as possible to return the project to a compliant condition.

It is not the intent of this ECMP to determine the anticipated positions necessary for the construction contractor to successfully complete construction of the project (see Section 4.2, Table 4-1 of the POD); however, the construction contractor will be required to maintain and facilitate compliance with the environmental protection measures identified in the POD, and to ensure appropriate project communication between the construction contractor, CIC, BLM, Proponent, and environmental inspectors.

## **4. ENVIRONMENTAL COMPLIANCE RECORDING PROCEDURES**

This section describes the general recording procedures for environmental compliance to be implemented on a daily or as needed basis during construction activities for the project. While daily construction and monitoring activities will vary throughout the construction phase, recording procedures, compliance determinations, and variance requirements will remain constant for all construction activities in accordance with the environmental regulations identified in the right-of-way grant, POD, CEC, and other environmental documents specific to the project. Specifically, this section addresses compliance levels and variances for construction activities.

### **4.1. Environmental Compliance Levels**

Each construction spread and activity will be monitored (as appropriate), inspected, and documented in a daily report. This report will assign an environmental compliance level for the day's construction activity, as defined below. In determining the environmental compliance level, the environmental inspectors, CIC, and Environmental Compliance Manager will assess construction activities based on the extent and nature of actual impacts on a resource, the potential for additional impacts to a resource, the intent behind the action, and the history of occurrence of a potential noncompliant situation.

#### **4.1.1. Compliant**

All construction activities are in compliance with the environmental requirements stipulated in the right-of-way grant, POD, and other project environmental permits, and will be documented as compliant for the day.

#### **4.1.2. Problem Area**

A problem area is a construction location or construction activity that does not meet the definition of compliant, but is not in noncompliance. The problem area category can be used in a variety of situations, including:

- A minor incident that is corrected in a timely manner (generally within the same construction work day), as determined by the CIC and/or BLM Authorized Officer
- A location where the project is not in direct noncompliance, but is one where the inspector or CIC determines that damage to a resource could occur if corrective actions are not taken
- An activity that is isolated and determined unintentional that causes no direct damage to a resource

If a problem area is corrected in a timely manner, it will not be considered a noncompliance. If a problem area is found to be a repeat situation or has happened in multiple locations or is not corrected within an agreed upon time frame, the environmental inspector, CIC, or Environmental Compliance Manager may document the situation as noncompliant. The environmental inspector, CIC, or Environmental Compliance Manager will inform the lead construction contractor employee onsite of the problem area before issuing a noncompliance determination, and will discuss appropriate procedures for its prompt correction. Environmental inspectors will document problem areas and their corrections in daily monitoring reports. Problem areas identified by the CIC will be reported to and discussed with the environmental inspectors and Environmental Compliance Manager. If the problem area is not corrected in the agreed upon time frame, or resource damage occurs, or similar problem area activities occur repeatedly, a noncompliance report may be issued.

#### **4.1.3. Noncompliance**

A noncompliance report will be issued when construction activities violate the project's environmental requirements, resulting in damage to a resource or placing sensitive resources at unnecessary risk (as determined by the CIC and/or BLM Authorized Officer). Factors that contribute to noncompliance will be the extent of damage to the resource, the intent of the action, and the determination of the action being a repeat occurrence. A noncompliance report may also be issued for direct disregard for project requirements that do not directly cause harm to sensitive resources (e.g., using unapproved access roads, construction activities resulting in disturbance outside of established project boundaries, etc.).

Should the CIC observe a noncompliant activity, the Environmental Compliance Manager and the lead construction contractor employee onsite will be notified immediately to discuss the noncompliance situation prior to issuing a noncompliance report. Noncompliance reports will include the name of the lead construction contractor employee at the site of the noncompliance, the noncompliance situation, date, and time of the determination. Unless otherwise specified by the CIC, work at the site of the noncompliance will temporarily stop until the situation is corrected. A resolution report will be filed documenting its resolution and the monitor will inform the construction contractor and the Proponent of the noncompliance.

If the environmental inspectors observe a noncompliance, they will notify the on-site lead construction contractor immediately, as well as the Environmental Compliance Manager and CIC. Unless otherwise specified by the CIC, work at the site of the noncompliance situation will temporarily stop until compliance is achieved. The environmental inspector will document the noncompliance in the daily monitoring report, which will be filed with the Environmental Compliance Manager. The Environmental Compliance Manager will submit all noncompliance reports and reports documenting resolution to the CIC and BLM Authorized Officer.

The environmental inspectors and Environmental Compliance Manager will coordinate to establish the appropriate corrective actions and time frames for the resolution of noncompliance. The environmental inspectors will be responsible for communicating the corrective actions to the lead construction contractor employee onsite. If necessary, the CIC, Environmental Compliance Manager, and the construction contractor will determine the level of retraining for the crew involved. Following a noncompliance, the CIC, construction contractor, Environmental Compliance Manager, environmental inspector, and Proponent will discuss the situation and how to best implement measures to prevent a recurrence.

#### **4.1.4. Response to Noncompliant Activities**

If resolution of a noncompliant situation is not achieved through the process described above, other measures may be taken. These measures are described below.

##### **4.1.4.1. Temporary Suspension**

For incidents of noncompliance by the Proponent or the construction contractor that remain unresolved, the CIC or BLM Authorized Officer may issue a temporary suspension to halt specific activities or all activities in a localized work area. The temporary suspension shall be issued orally and in writing to the Proponent's project manager or designee, and the Proponent shall immediately provide notice of the temporary suspension to the construction contractor.

##### **4.1.4.2. Work Stoppage Order**

In the event of serious noncompliance that could reasonably be expected to result in a risk of death or harm to persons, or repeated violations of environmental requirements that have a detrimental effect to sensitive resources, a WSO will be issued by the CIC or BLM Authorized Officer. A WSO will temporarily suspend all construction activities at the noncompliant construction spread and may be issued orally or in writing to the Proponent by the CIC or BLM Authorized Officer.

A conference call will be held with the CIC, BLM Authorized Officer, Proponent, Environmental Compliance Manager, and construction contractor within 24 hours to discuss the issue requiring a WSO and, if necessary, a face-to-face meeting will be scheduled to resolve the incident. Such a meeting would be held with all parties to discuss the noncompliance resolution within 24 hours of the initial conference call (excluding weekends and federal holidays). Upon successful resolution (including documentation), the Proponent may file a written request to the BLM to resume construction activities. The BLM shall review and respond to the Proponent's written request to resume activities within 24 hours of receipt, and will either approve the request

or provide additional criteria that must be met prior to the resumption of construction activities. Any additional noncompliance resolution criteria must cite the applicable law(s), agreement(s), and/or permit requirements. No construction activities shall be undertaken (except emergency or safety-related) until formal approval of the noncompliance situation is provided by the CIC or BLM Authorized Officer.

#### **4.1.4.3. Grant Suspension or Termination**

In accordance with 43 CFR 2807.17(a), the BLM may suspend or terminate the right-of-way grant if the Proponent and/or its construction contractor does not comply with applicable laws and regulations or any terms, conditions, or stipulations of the grant (e.g., excessive or continuous noncompliance activities that demonstrate a willful disregard for right-of-way grant(s) terms and conditions). Prior to suspension or termination, the Proponent will be notified in writing and allowed a reasonable opportunity, as determined by the BLM Authorized Officer, to correct any noncompliance pursuant to 43 CFR 2807.18(a); and, if applicable, provided a hearing pursuant to 43 CFR 2807.18(b).

#### **4.2. Variance Procedures (Project Deviations)**

The intent of this section is to inform the Proponent, the BLM, construction contractor, and other project personnel of the variance request process in order to minimize potential costly construction delays. It is understood by the BLM and Proponent that unforeseen circumstances could likely occur during construction. The need for realignments to the proposed route, access roads, and/or work areas that are not within the permitted project right-of-way and EIS analysis may arise. In addition, the need to make changes to construction procedures, schedules, and/or approved mitigation measures and other specific stipulations and methods may be required. Under these or similar circumstances on nonprivate lands, a variance will need to be filed and approved by the BLM to stay in compliance.

Where project changes occur on private land, including changes to the project route, access roads, work areas, construction procedures, schedule, mitigation measures, or other stipulations agreed upon in private land easements, written approval of the change from the affected landowner to the Proponent must be obtained and provided to the CIC for inclusion in the project record and End of Construction Project Report (see Section 6 of this ECMP). The remainder of this section pertains to project changes on nonprivate lands.

Variance requests will be generated by the construction contractor and provided in writing to the Proponent, who will then review the request. The construction contractor will provide a brief description of the variance, the need for it, and a map sheet showing the location of the proposed change. In addition, the construction contractor will include a field review by the environmental inspectors assessing the potential effects to cultural, biological, paleontological, or other resources, as appropriate. The Proponent will evaluate the variance request and submit it and the supporting documentation to the CIC.

The CIC is responsible for providing supporting documentation and an on-the-ground perspective of the requested variance to the BLM Authorized Officer or designee. The CIC is given authority by the BLM to approve a Level 1 variance in the field. In addition, upon



consulting with the BLM Authorized Officer, the CIC is given the authority to approve a Level 2 variance. Authority to approve or deny Level 3 variance requests rests with the BLM Authorized Officer or designee (see Attachment A9-2: Variance Request Process).

A variance request form will be developed by the construction contractor, reviewed and approved by the Proponent, and then reviewed and approved by the BLM prior to the start of construction. The variance request form will be incorporated into the preconstruction environmental training program, and will describe the variance request in detail, provide justification and documentation for the variance (including maps and photos, calculation of the proposed permanent or temporary acreage affected), describe the original disturbance acreage analyzed in the EA/CEC/POD, and show the difference in acreage between the proposed variance and the original disturbance. It will also describe any potentially impacted resources and identify if additional resource surveys will be required.

The variance may be implemented in the field as soon as the approved variance is received by the construction contractor. The CIC is responsible for communicating with the Proponent regarding variance status, and the Proponent is responsible for communicating with the construction contractor prior to modifications being made on the ground.

Table A9-1 summarizes the different variance levels, potential uses, and approvals required in order to obtain the Project variance.

<b>Table A9-1. Summary of Variance Procedures</b>		
<b>Variance Level</b>	<b>Potential Use</b>	<b>Approval</b>
Level 1	Minor field adjustments	CIC
Level 2	Modify POD	CIC w/concurrence of BLM Authorized Officer
Level 3	Amend right-of-way grant	BLM Authorized Officer

#### **4.2.1. Level 1 Variance – Variances Accomplished through Field Resolution**

A Level 1 variance is a minor field adjustment within the approved BLM right-of-way grant that conforms to the POD. The CIC has been given authority by the BLM to approve these variances in consultation with the Proponent's Environmental Compliance Manager. However, the desired adjustments or deviations would be documented in a variance request form for inclusion in the Project record. The CIC would inform the Proponent's Environmental Compliance Manager and the BLM Authorized Officer of these minor changes by including any changes in that week's progress report.

Examples of minor field adjustments include, but are not limited to, the following:

- Relocating erosion control devices (this could also require a modification to the Stormwater Pollution Prevention Plan [SWPPP])
- Locating temporary fences inside authorized work areas

- Permitting water bars to be extended, if applicable, off the area designated for the transmission line, and into native vegetation “one dozer length” (this includes providing permission for construction equipment to work outside designated work areas)
- Allowing rubber-tired vehicles to use additional designated access roads (in addition to those approved in BLM approval documents) where improvements to the road would not be necessary (not intended for authorizing additional haul roads for equipment and materials)
- Temporarily (7 days or less) placing transmission structure parts or other assemblies outside areas designated in the POD, but within the authorized project area; this does not include any surface disturbance associated with temporary storage

### **Level 1 Variance Approval or Denial**

A CIC can approve or deny Level 1 variance requests in the field, if the results of implementing the changes are not significant. In some cases, the CIC may consult with the BLM Authorized Officer. If a Level 1 request is approved by the CIC, signatures on the variance request form (see Attachment A9-3) will also be required from the Proponent’s project manager or delegate. Once approved and signed by the CIC, a Level 1 variance can be implemented in the field. The CIC will document the approved variance in the daily reports.

If a Level 1 variance is denied, the CIC will inform the Proponent’s project manager within 24 hours; the project manager may then choose to resubmit the request as a Level 2 variance or discontinue pursuit of the request.

### **Level 1 Variance Distribution**

The CIC will give/send the approved Level 1 variance request to the Proponent’s project manager, who will then distribute the variance on the construction side of the project. The CIC will provide the BLM Authorized Officer with copies of approved Level 1 variances on a daily basis, and will generate a report at the end of each week identifying all Level 1 variances approved during the previous week.

### **4.2.2. Level 2 Variance – Variances beyond Field Resolution, Not Requiring an Amendment to the Right-of-Way Grant**

Level 2 variances pertain to requests that exceed the field decision authority of the CIC, requiring approval by the BLM Authorized Officer with concurrence of BLM resource specialists. These requests generally involve project changes that would affect an area outside of the previously approved work area, but within the area previously surveyed and/or analyzed for cultural resources, Section 404 of the Clean Water Act, and paleontological and biological resources. Such variance requests typically require review of supplemental documents, correspondence with additional agencies or jurisdictions, and records to be provided with the request. Examples include, but are not limited to the following:

- Shifting extra workspace outside the approved construction corridor, but within the area previously surveyed where overall disturbance type and acreage remains approximately the same, and no additional cultural, paleontological, biological resources, or invasive weed infestations could be affected
- Using additional extra workspace outside of the previously approved work areas (within or outside the project right-of-way)
- Shifting temporary workspace to previously disturbed areas
- Allowing construction or maintenance activities to be conducted in project areas when seasonal restrictions are in place
- Moving proposed culvert location(s), to better accommodate natural drainages (may also require a modification to the SWPPP)
- Providing extra work space for topsoil and spoil material storage to prevent mixing of soils
- Moving a range fence a specified distance laterally, and permanently installing it to avoid proposed construction (this may also require an amendment to the Allotment Management Plan, if applicable)
- Modifying an access road due to safety hazards

Variance requests may also be submitted for minor changes that would extend beyond the previously surveyed work area and corridor for sensitive resources. In these situations, additional cultural, biological, noxious weed, and/or paleontological surveys may be required. Documentation of any applicable survey and other applicable correspondence would need to be submitted with the variance request. If sensitive biological or cultural resources are encountered during the additional surveys, documentation of consultation with applicable agencies (e.g., USFWS, AZGFD, Arizona SHPO, etc.) must be provided with the variance request. All BLM-approved stipulations must be adhered to in order for the variance to be approved.

To initiate a Level 2 variance request, the Proponent's project manager will determine the need for the variance. The request form, with attached supporting documents, will be submitted by the Proponent's project manager to the CIC for review. Following this review, the CIC will submit the request form and attachments to the BLM Authorized Officer, who then will provide the Proponent's project manager with written approval or denial (including an explanation). The BLM Authorized Officer or BLM representative may request additional information, or a modification of the request, before the variance can be approved. In addition, the Proponent's project manager will be informed if an amendment to the BLM right-of-way grant will be required.

### **Level 2 Variance Approval or Denial**

The BLM Authorized Officer will review the variance request form and any attachments, in consultation with the appropriate BLM resource specialists. If additional information or a modification to the request is required, the Proponent's project manager will submit the requested information within 5 business days to the BLM Authorized Officer, who will then

provide the project manager with written approval or denial of the request (including an explanation) by using the space provided on the form, also within 5 business days of receipt.

The Proponent's project manager may choose to resubmit the request as a Level 3 variance request or discontinue pursuit of the request.

### **Level 2 Variance Distribution**

The CIC will give/send the approved Level 2 variance request to the Proponent's project manager, who will then distribute the variance on the construction side of the project. The CIC will provide the BLM Authorized Officer copies of approved Level 2 variances daily, and will generate a report at the end of each week identifying all Level 2 variances approved during the previous week.

### **4.2.3. Level 3 Variance – Variances Requiring an Amendment to the Right-of-Way Grant**

The BLM Authorized Officer will assist the CIC and Proponent in determining whether a significant proposed change outside the approved BLM right-of-way grant, will necessitate submittal of an amendment, or whether the change can be handled with a Variance Request Form.

An example of a variance requiring an amendment to the BLM right-of-way grant is presented as follows:

Any proposed construction modification that the BLM Authorized Officer and CIC have determined to involve substantial deviations from the right-of-way grant will require a grant amendment, in accordance with 43 CFR 2807.20. An amendment to the right-of-way grant requires completion of an application on a Standard Form 299, and a decision by the BLM Authorized Officer. The Proponent's project manager will prepare the Standard Form 299 with supporting documentation, including but not limited to a POD and map of the variance area (1:24,000 scale), and will forward it to the appropriate BLM office. The BLM will process the amendment application pursuant to 43 CFR 2800, and may request additional information, or a modification of the request, before the amendment can be approved.

Grant amendments will be reviewed by BLM staff who will consult with other federal, state, and local agencies as needed. Grant amendment approvals or denials will come directly from the BLM. Approval of the grant amendment also requires issuance of a Notice to Proceed (NTP) addressing the amendment, should it be a requirement of the original right-of-way grant. Examples of grant amendment requests include:

- Route realignments or facility relocations onto BLM land not analyzed in the EA/CEC and included in the right-of-way grant
- Expansion of the project area defined in the right-of-way grant and POD
- Requests affecting sites potentially eligible for the NRHP or involving state or federally protected species or their habitat

#### **4.3. Reporting and Documentation**

Multiple forms and reports will need to be completed on a regular basis during the course of construction. These reports and forms include:

- Daily Monitoring Record – At the end of each construction day, environmental inspectors will fill out daily monitoring records to document environmental compliance of the day's construction activities, with respect to environmental compliance. Photo documentation of construction activities for the day will also be included, as appropriate. Environmental Inspector reports will be submitted to the Environmental Compliance Manager and will be consolidated and a daily report sent to the BLM (see Attachment A9-4: Daily Inspection Report Form).
- Weekly Summary Reports – The Environmental Compliance Manager will produce a weekly report documenting the week's activities and compliance issues, to be submitted to the Proponent and the CIC, and will be available to the BLM upon request. The CIC will submit a weekly compliance report to the BLM to be delivered to a secured website.
- Variance Request Forms – Variance requests will be produced by the construction contractor, reviewed by the Proponent, and submitted to the CIC for review before submittal to the BLM for approval. It is critical that these forms include the proper accompanying documentation (photos, maps, alignment sheet excerpts, drawings, etc.). The Proponent's Environmental Compliance Manager will track, distribute, and archive all approved and denied variances (see Attachment A9-3: Variance Request Form).
- Problem Area Report Forms – This section of the daily report will capture all information pertaining to a problem area documented that day. Photo documentation is required. A separate resolved problem area report may be required if the problem area is not resolved on the same day.
- Noncompliance Report Form – This section of the daily report will capture all information pertaining to a noncompliance documented that day. Photo documentation is required, and a separate resolved noncompliance report may be required if the noncompliance is not resolved on the same day (see Attachment A9-5: Noncompliance Report Form).
- Weekly Training Log – As necessary, a training log with the names and signatures of all employees that went through environmental training that week will be compiled and distributed by the Environmental Compliance Manager. The weekly training log will be distributed to the CIC, BLM Authorized Officer or designee, construction contractor, and Proponent.

#### **5. COMMUNICATIONS**

Communication between all parties is critical to maintaining environmental compliance throughout project construction. As specified in Appendix A3 of the POD, the construction contractor, CIC, and all environmental inspectors will maintain a communications network that consists of one or both of the following devices: two-way radios or cellular phones. This will

allow for immediate coordination between all parties, which will facilitate resolution of any questions and/or monitoring requirements prior to or during construction activities. Oral communication will not be an acceptable substitute for written approvals.

### **5.1. Primary Inter-Party Communication Channels**

The following relationships are not intended to limit communication on the project; rather they demonstrate the primary channels of routine communication between parties for compliance related issues.

- **BLM Authorized Officer or designee:** CIC, Environmental Compliance Manager, and Proponent's project manager
- **CIC:** BLM Authorized Officer or designee, Environmental Compliance Manager, Environmental Inspectors, Proponent's project manager, and lead construction contractor employee at each construction spread
- **Proponent's Project Manager:** construction contractor, BLM Authorized Officer or designee, CIC, and Environmental Compliance Manager
- **Environmental Compliance Manager:** BLM Authorized Officer or designee, CIC, lead construction contractor employee at each construction spread, environmental monitors and resource specialists
- **Environmental Inspectors:** Environmental Compliance Manager, lead construction contractor employee at each construction site
- **Construction Contractor:** Proponent's project manager and construction contractor employees (construction contractor communication protocol to be developed and provided to the Project Proponent upon their request)

### **5.2. Daily Communications**

The construction contractor will schedule and host daily morning meetings to review the location and extent of each day's construction activities. The discussion should highlight safety and environmental issues, including a summary of activities that require monitoring by environmental inspectors and coordination with the CIC. Evidence of proper approvals must be furnished for any activities scheduled to occur outside designated areas. Attendees should include the CIC (or designee), the Environmental Compliance Manager (or designee), and the lead construction contractor employee(s) for each construction spread. Meeting topics should include:

- safety review
- planned work activities and locations for the day
- right-of-way and land owner restrictions
- available access roads
- reminders of environmental requirements specific to the day's construction activities
- discussion of procedures required for work in proximity to sensitive resources
- upcoming, potential environmental issues

In addition to the morning meeting, construction contractor employees and environmental monitors and resource specialists will conduct "tailgate" meetings in the field, as needed, to address issues as they arise throughout the day.

## **6. PROJECT CLOSEOUT**

Upon notification of completion of the project construction (including initial restoration activities as required by the BLM), the CIC will coordinate with the BLM Authorized Officer or designee and resource staff to conduct final on-the-ground inspections. These will take place within 30 days of notification from the Proponent and construction contractor to ensure work was completed in accordance with the right-of-way grant, CEC, POD, and any other applicable permits. If the BLM Authorized Officer determines that construction has been completed in compliance with the right-of-way grant, CEC, POD, and any other applicable permits, the construction roles of the CIC, construction contractor, and Proponent will be considered complete. Upon this determination, the construction contractor will be released from any further environmental compliance requirements for the project.

### **6.1. End of Construction Project Report**

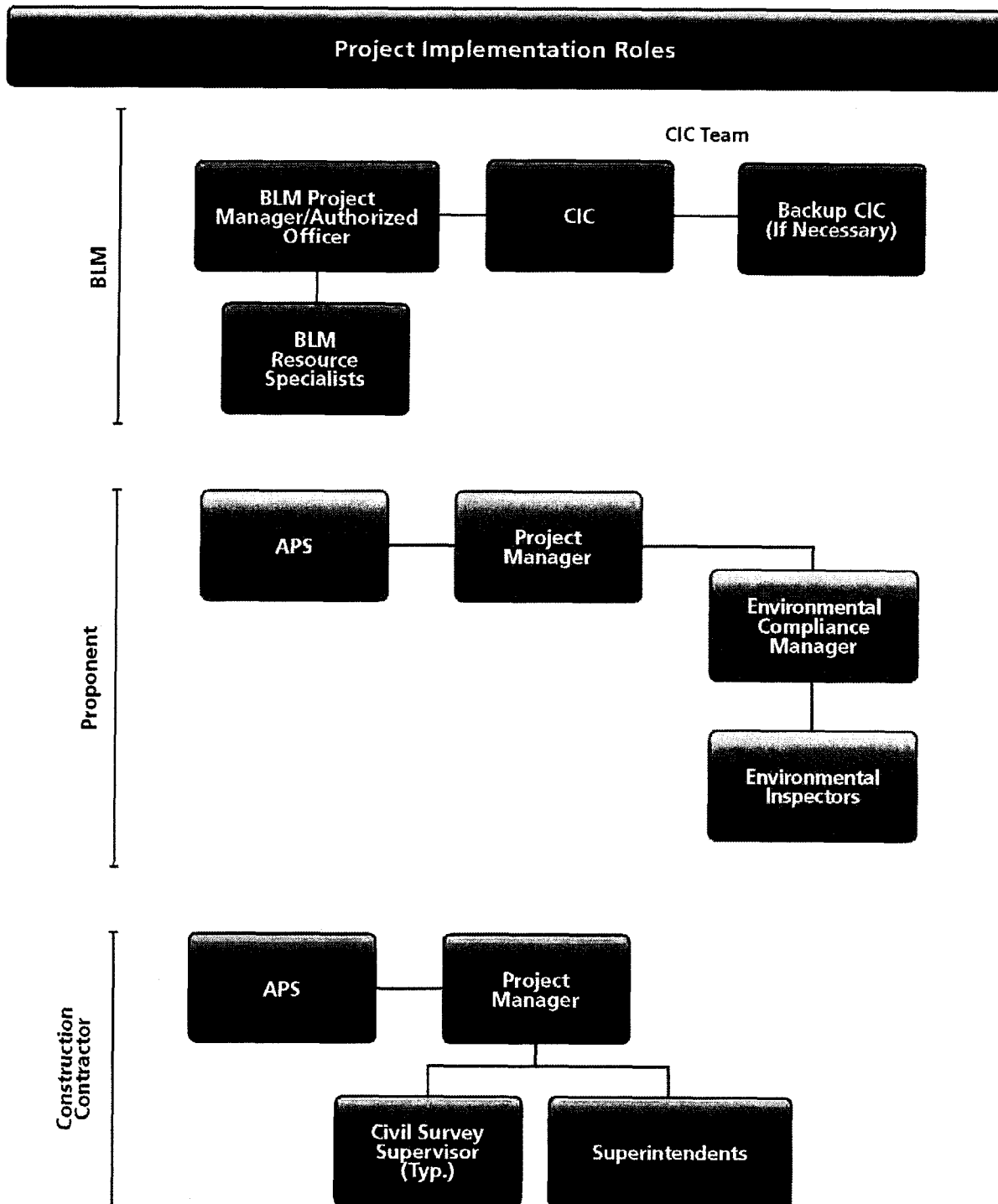
Within 60 days of the BLM's determination of successful construction completion, the CIC will submit a final summary report to the BLM Authorized Officer or designee, documenting the construction process and activities in relation to the items listed below.

- Amount of actual temporary and permanent project disturbance (acres) in comparison with the POD
- Number of known special status species (plants or animals) taken, including the capture, displacement, mortality, and injury and/or harassment by other means, during project construction activities
- Compilation of all daily compliance reports (including digital pictures)
- Deviation requests and corresponding CIC/BLM decisions
- Temporary work suspensions and work stoppage orders for violation of environmental compliance terms, and documentation of resolution

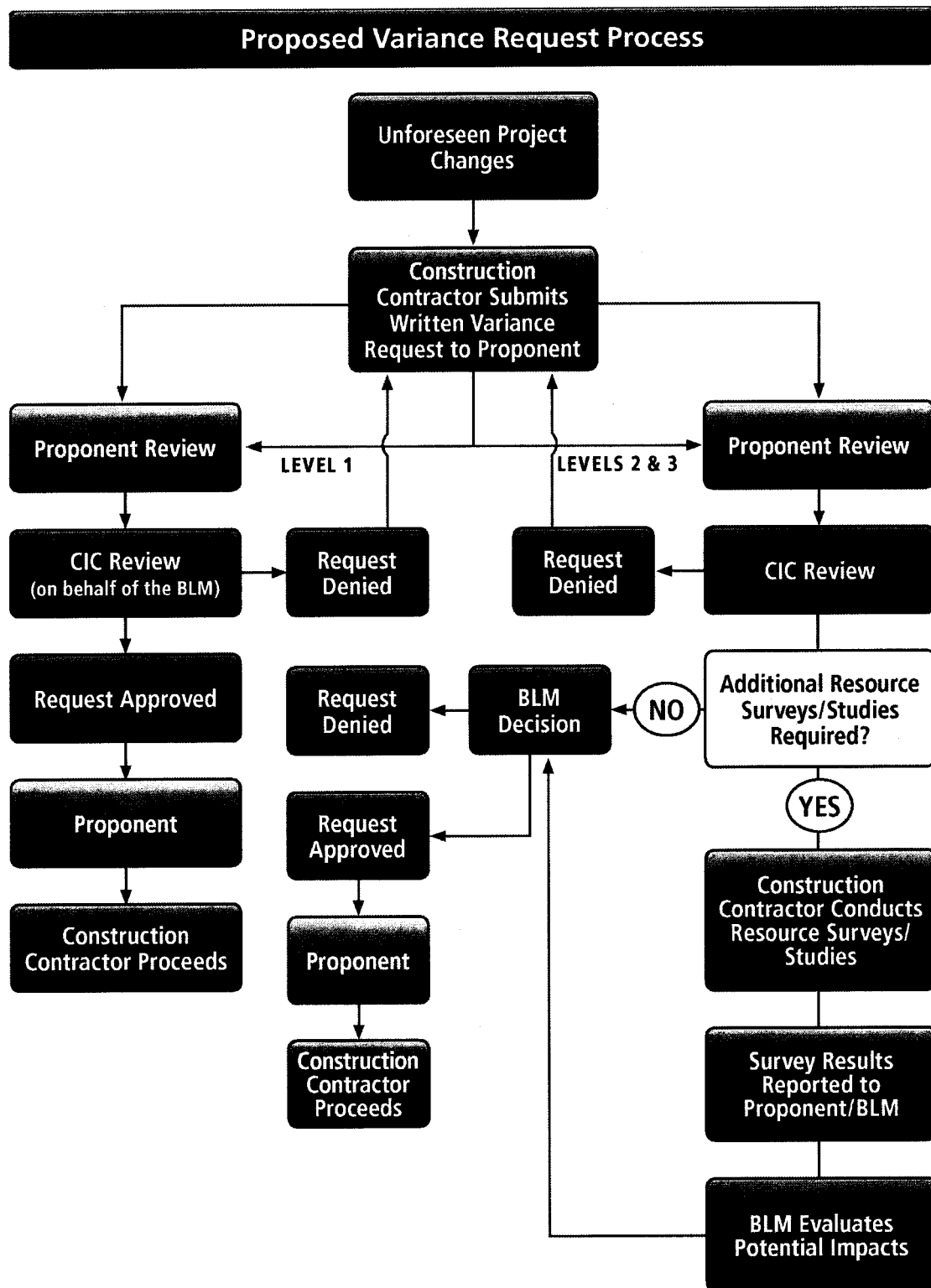
### **6.2. Construction Closeout Meeting**

As required by the BLM, the CIC will coordinate a construction closeout meeting with the BLM, Proponent, construction contractor, other field monitors and affected agencies to document that all agency requirements have been met, determine areas of improvement, and ensure all issues have been satisfactorily resolved.

## Attachment A9-1: Organization Chart







## Attachment A9-3: Variance Request Form

### SAMPLE

<b>EXAMPLE Variance Request Form</b>		Variance Request No.: <span style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em; vertical-align: middle;"></span>	
(Note: All fields shaded in yellow are to be completed as applicable.)			
Requested by: <span style="border: 1px solid black; display: inline-block; width: 150px; height: 1.2em; vertical-align: middle;"></span> Request prepared by: <span style="border: 1px solid black; display: inline-block; width: 150px; height: 1.2em; vertical-align: middle;"></span> Spread: <span style="border: 1px solid black; display: inline-block; width: 50px; height: 1.2em; vertical-align: middle;"></span>		Date Submitted to Proponent: <span style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em; vertical-align: middle;"></span>	
		Date Proponent Submitted to BLM: <span style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em; vertical-align: middle;"></span>	
		Date BLM Approves or Denies: <span style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em; vertical-align: middle;"></span>	
		BLM Approval Reference No. <span style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em; vertical-align: middle;"></span>	
		Variance Type: <span style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em; vertical-align: middle;"></span>	
		Variance Sequence Number: <span style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em; vertical-align: middle;"></span>	
<b>Location (Use either Station or Milepost)</b>			
Station: <span style="border: 1px solid black; display: inline-block; width: 80px; height: 1.2em; vertical-align: middle;"></span>	To: <span style="border: 1px solid black; display: inline-block; width: 80px; height: 1.2em; vertical-align: middle;"></span>	Milepost: <span style="border: 1px solid black; display: inline-block; width: 80px; height: 1.2em; vertical-align: middle;"></span>	To: <span style="border: 1px solid black; display: inline-block; width: 80px; height: 1.2em; vertical-align: middle;"></span>
Alignment Sheet Number: <span style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em; vertical-align: middle;"></span>		Tract No.: <span style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em; vertical-align: middle;"></span>	
Landowner: <span style="border: 1px solid black; display: inline-block; width: 150px; height: 1.2em; vertical-align: middle;"></span>		Other Agency Jurisdiction: <span style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em; vertical-align: middle;"></span>	
Current Land Use/Vegetative Cover: <span style="border: 1px solid black; display: inline-block; width: 150px; height: 1.2em; vertical-align: middle;"></span>			
<b>Nearby Features (Waterbody, T&amp;E Habitat, Wetland, Noxious Weed Area, Residence [distance], Cultural Resource Site [distance], etc.):</b>			
<input type="checkbox"/> Noxious Weed Area	<input type="checkbox"/> Residence (distance) <span style="border: 1px solid black; display: inline-block; width: 50px; height: 1.2em; vertical-align: middle;"></span>	In or within 100 feet of a wetland: <input type="checkbox"/> Yes <input type="checkbox"/> No	
<input type="checkbox"/> T/E Species Habitat	<input type="checkbox"/> Cultural Resource Site (distance) <span style="border: 1px solid black; display: inline-block; width: 50px; height: 1.2em; vertical-align: middle;"></span>	In or within 100 feet of a waterbody: <input type="checkbox"/> Yes <input type="checkbox"/> No	
<input type="checkbox"/> Raptor Nest	<input type="checkbox"/> Water Well	Wetland or Waterbody ID: <span style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em; vertical-align: middle;"></span>	
<input type="checkbox"/> Other (Specify): <span style="border: 1px solid black; display: inline-block; width: 150px; height: 1.2em; vertical-align: middle;"></span>			
<b>Net acreage affected:</b> <span style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em; vertical-align: middle;"></span>			
<b>To be Completed by the LEI or CIC</b>			
Variance Level: <input type="checkbox"/> Minor <input type="checkbox"/> Major			
Variance From: <input type="checkbox"/> Permit <input type="checkbox"/> POD <input type="checkbox"/> ROW Grant <input type="checkbox"/> FEIS <input type="checkbox"/> Specification <input type="checkbox"/> Drawing <input type="checkbox"/> Mitigation Measure			
<input type="checkbox"/> Landowner <input type="checkbox"/> Other Describe: <span style="border: 1px solid black; display: inline-block; width: 150px; height: 1.2em; vertical-align: middle;"></span>			
Detailed Description of Variance: <span style="border: 1px solid black; display: inline-block; width: 150px; height: 1.2em; vertical-align: middle;"></span>		Attachments? <input type="checkbox"/> Yes <input type="checkbox"/> No      Photographs? <input type="checkbox"/> Yes <input type="checkbox"/> No	
List Attachments: <span style="border: 1px solid black; display: inline-block; width: 150px; height: 1.2em; vertical-align: middle;"></span>			
Variance Justification: <span style="border: 1px solid black; display: inline-block; width: 150px; height: 1.2em; vertical-align: middle;"></span>			
<b>For Proponent Variance Management Use Only</b>			
<b>Additional Surveys Required</b>		<b>Additional Surveys Completed</b>	
Cultural Survey <input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
T&E Survey <input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Proof of Previous Biological and Cultural Survey Clearance</b>			
Sign-off (as appropriate)	Name (Print)	Approval Signature	Conditions (See Attached)
RMP Environmental Compliance Manager	<span style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em; vertical-align: middle;"></span>	<span style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em; vertical-align: middle;"></span>	<input type="checkbox"/> Yes <input type="checkbox"/> No
Lead Environmental Inspector	<span style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em; vertical-align: middle;"></span>	<span style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em; vertical-align: middle;"></span>	<input type="checkbox"/> Yes <input type="checkbox"/> No
Land Agent	<span style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em; vertical-align: middle;"></span>	<span style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em; vertical-align: middle;"></span>	<input type="checkbox"/> Yes <input type="checkbox"/> No
Contractor Environmental Coordinator	<span style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em; vertical-align: middle;"></span>	<span style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em; vertical-align: middle;"></span>	<input type="checkbox"/> Yes <input type="checkbox"/> No

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For BLM Compliance Monitor and compliance manager Use Only				<input type="checkbox"/> Yes	<input type="checkbox"/> No
Variance Approved:		Variance Denied:		Beyond Authority:	
Signature::					
Date:					
Stipulations:					

Variance Conditions			
Name:		Title:	Organization:
Conditions:			
Name:		Title:	Organization:
Conditions:			
Name:		Title:	Organization:
Conditions:			

#### VARIANCE REPORT FORM DEFINITIONS

CODE	TYPE
AR	Request new access road
CM	Request new or different construction
MM	Request new or different mitigation method
PM	Request permit modification
RA	Request new realignment of centerline
RR	Request re-route (outside cleared footprint)
WS	Request additional temporary workspace
CY	Request additional contractor yard
BLM	BLM EIS requirement
AG	Agency request

## Attachment A9-4: Daily Inspection Form

### SAMPLE

#### EXAMPLE Daily Inspection Form

(Note: All fields shaded in yellow are to be completed as applicable.)

Employee No.:		Daily Report Sequence Number:		Daily Inspection Report Number:	
Name:		Station Begin:		Crew:	
Date:		Station End:		Foreman:	
Spread:		Time:		Photo Documentation	
Tract:		Milepost Begin:			
		Milepost End:		Date:	
Activity Observed:		Use only stationing.			Time Stamp:

Site Conditions	
Weather Conditions (Clear, Cloudy, Partly Cloudy):	
Precipitation (None, Light Rain, Rain, Heavy Rain, Snow):	
Wind (None, Light Breeze, Windy, Heavy Wind):	
Temperature:	°F
ROW Conditions (Frozen, Dry, Wet, Saturated):	

Specification Source			
FEIS	<input type="checkbox"/>	ROD	<input type="checkbox"/>
SPCC	<input type="checkbox"/>	Noxious Weed Plan	<input type="checkbox"/>
POD	<input type="checkbox"/>	ROW Grant	<input type="checkbox"/>
Seeding	<input type="checkbox"/>	Land Owner Agreement	<input type="checkbox"/>
SWPPP	<input type="checkbox"/>	Unexpected Discoveries Plan	<input type="checkbox"/>
Other			
Drawing	<input type="checkbox"/>	Drawing Number (s)	

Inspection Due Diligence Checklist	Check Box	Compliance Level
Stormwater Plan Followed	<input type="checkbox"/>	Acceptable <input type="checkbox"/>
Measurable Rainfall in Area	<input type="checkbox"/>	Problem Area <input type="checkbox"/>
Weed Management Plan Followed	<input type="checkbox"/>	Non-Compliance <input type="checkbox"/>
ROW Boundaries Clearly Marked	<input type="checkbox"/>	Serious Violation <input type="checkbox"/>
Restricted Areas Being Properly Handled	<input type="checkbox"/>	
Refueling/Storage Done Properly	<input type="checkbox"/>	
Signage Properly Placed	<input type="checkbox"/>	
Erosion/Sediment controls	<input type="checkbox"/>	
Installed/Maintained	<input type="checkbox"/>	
Land Owner Conditions Implemented	<input type="checkbox"/>	
Workspace Clean and Debris Picked Up	<input type="checkbox"/>	
		Major Topic:
		Sub-Topic:
		Requirement:

Comments

Corrective Problem Area/Noncompliance/Serious Violation

Follow-up NC/PA Information

Time/Date Contractor Environmental Inspector Contacted	<input type="text"/>	Timeline	<input type="checkbox"/> 24 hours	<input type="checkbox"/> 48 hours	<input type="checkbox"/> 72 hours
Due Date for Acceptable Resolution:	<input type="text"/>	Follow Up Required:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Inspector Affirmation:	<input type="checkbox"/> By checking this box, I affirm that the above observations are correct to the best of my knowledge.				

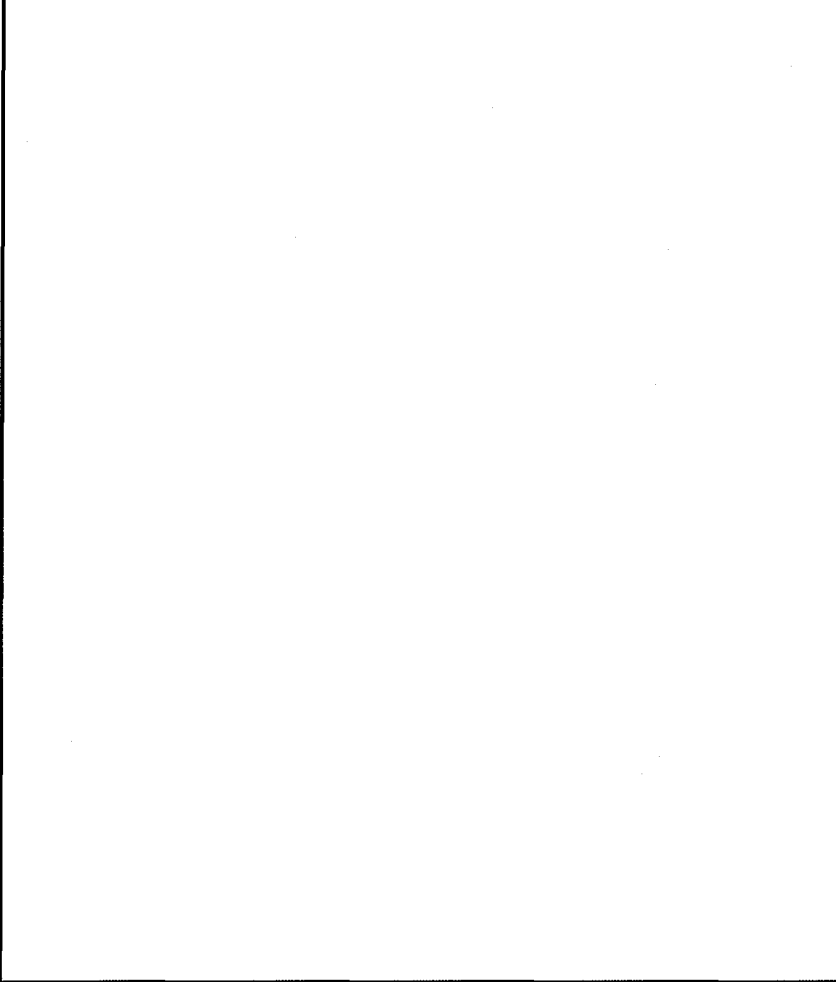
## Attachment A9-5: Noncompliance Report

### SAMPLE

<b>EXAMPLE Noncompliance Report</b>					
Inspector:				Date:	
Description of Location:					
Legal Description:	Township		Range		Section
Map Sheet Number:			Nearest Tower Number:		
Description of Noncompliance:					
Person and Company					
Responsible for the noncompliance:					
Resolution: (Continue on reverse if necessary)					
Photographs: <input type="checkbox"/> No <input type="checkbox"/> Yes					
Did the noncompliance result in surface disturbance? (if yes, map location and extent of disturbance and photograph) <input type="checkbox"/> Yes <input type="checkbox"/> No					
Description of Disturbance and Assessment of Impact:					
Was a protected plant taken or affected? <input type="checkbox"/> Yes <input type="checkbox"/> No					
Was a cultural or paleontological resource affected? (if yes, contact BLM and APS immediately) <input type="checkbox"/> Yes <input type="checkbox"/> No					

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Sketch surface disturbance and measurements:



CIC Signature:



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**APPENDIX B: VEGETATION MANAGEMENT  
GUIDELINES**

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## 1. INTRODUCTION

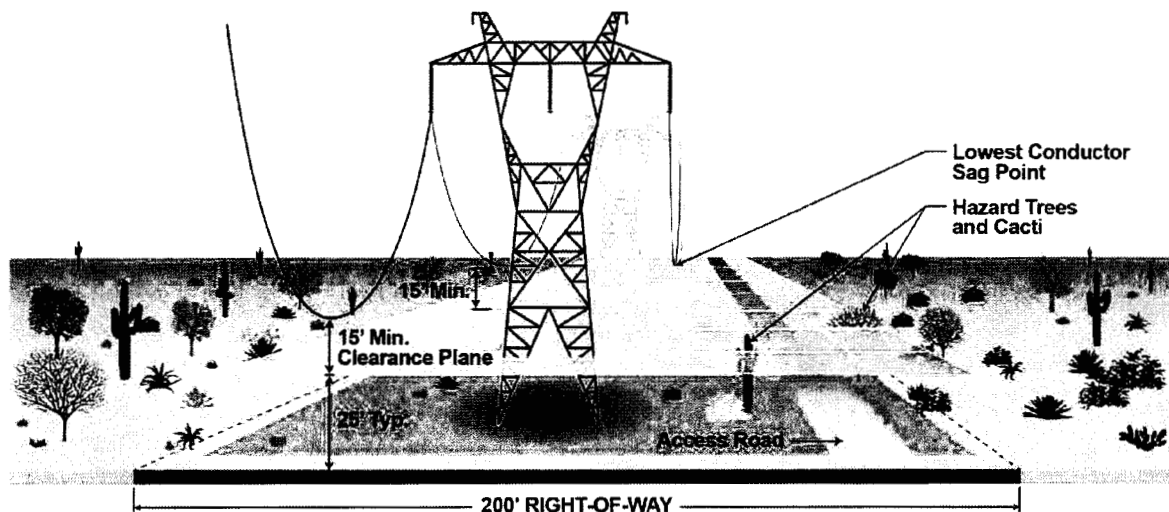
APS proposes to develop and implement a vegetation management and right-of-way maintenance program for the Palo Verde Hub to Sun Valley Substation 500kV Transmission Project. The proposed right-of-way corridor is up to 200 feet and the estimated length is approximately 45 miles (26 miles of which would cross BLM land).

The vegetation management and right-of-way maintenance program on BLM lands consists of two primary components: (1) initial vegetation removal and (2) vegetation management and right-of-way maintenance. The goal of the vegetation management and right-of-way maintenance program is to:

- Identify and remove vegetation, as necessary, that may pose a hazard to the safe and reliable operation of project facilities and the adjacent environment.
- Manage vegetation cover throughout the APS right-of-way, enabling the safe and reliable operation of project facilities in accordance with NERC standards and APS, and promoting suitable wildlife habitat, to the extent possible.
- Increase electric service reliability to communities by preventing interference and power outages caused by vegetation overgrowth.
- Maintain safe and reasonable access to the transmission lines and structures for inspection and maintenance.
- Minimize potential for and intensity of wildfires and associated threats (e.g., injury to human life, property, and critical habitat) that could result from vegetation in proximity to project facilities.

## 2. INITIAL VEGETATION REMOVAL

NERC Standards (FAC-003-1) require that a transmission owner prepare and keep current a formal transmission vegetation management program that includes the owner's objectives, practices, approved procedures, and work specifications. Specifically, NERC Standards (FAC-003-1) require that the transmission owner shall establish clearances to be achieved at the time of vegetation management work and shall also establish and maintain a set of clearances to prevent flashover between vegetation and overhead conductors. Per these standards, the APS Long-Term Right-of-Way Management Plan requires a minimum clearance distance of 24 feet for side clearance and 41 feet 4 inches for under-wire clearance between vegetation and the conductors of a 500kV transmission line. APS proposes to remove vegetation where necessary within the right-of-way to satisfy the clearance requirements established by NERC Standards and the APS Long-Term Right-of-Way Management Plan, as well as to proactively manage vegetation conditions to minimize the risk and intensity of potential wildfire within and adjacent to the APS right-of-way (Figure B-1). This includes the removal of trees, tall shrubs, tall cacti, and other vegetation that either conflict or have the potential to conflict with NERC Standards and the APS Long-Term Right-of-Way Management Plan described above, or that pose a potential wildfire threat to the operation of APS facilities.



**Figure B-1. Typical Right-of-Way Conditions and Requirements**

The intent of initial vegetation removal is to clear the right-of-way to the extent necessary to safely operate the transmission lines and establish a baseline condition from which to manage vegetation and maintain project facilities. It is anticipated that the initial vegetation removal will require the greatest amount of vegetation to be removed within and adjacent to the right-of-way in comparison to vegetation management and right-of-way maintenance activities. The initial vegetation removal process is the first step in progressing toward the desired right-of-way vegetation management condition of stable, low-growing native vegetation free of noxious weeds. This stable, low-growing native vegetation community would typically be represented by early- to mid-seral stages of native herbaceous plants, shrubs, and low-growing trees, as well as some climax species of low-growing trees and cacti.

Initial vegetation removal typically consists of two components to establish the desired baseline condition from which to manage vegetation and maintain project facilities: (1) identification and removal of potentially hazardous vegetation within and outside of the right-of-way and (2) establishment of structure work areas and permanent maintenance pads.

Initial vegetation removal methods consist of manual and mechanical methods and will vary based on the type of vegetation, terrain conditions, management objectives, and other resource considerations in the area of the removal.

### **2.1. Identification and Removal of Potentially Hazardous Vegetation**

An integral part of the vegetation management and right-of-way maintenance program would be the identification and removal of potentially hazardous vegetation. Hazardous vegetation is defined as that which is located within or adjacent to the right-of-way that presents an immediate hazard to the facility or has the potential to become a hazard to the facility by encroaching within the minimum clearance distance to the conductor as a result of bending, growing, swinging, or falling toward the conductor. In addition, dense stands of vegetation within the right-of-way that do not encroach within the minimum conductor clearance requirements may also be considered

an immediate hazard to the facility due to potential arcing that could occur from smoke plumes in the event of a wildfire.

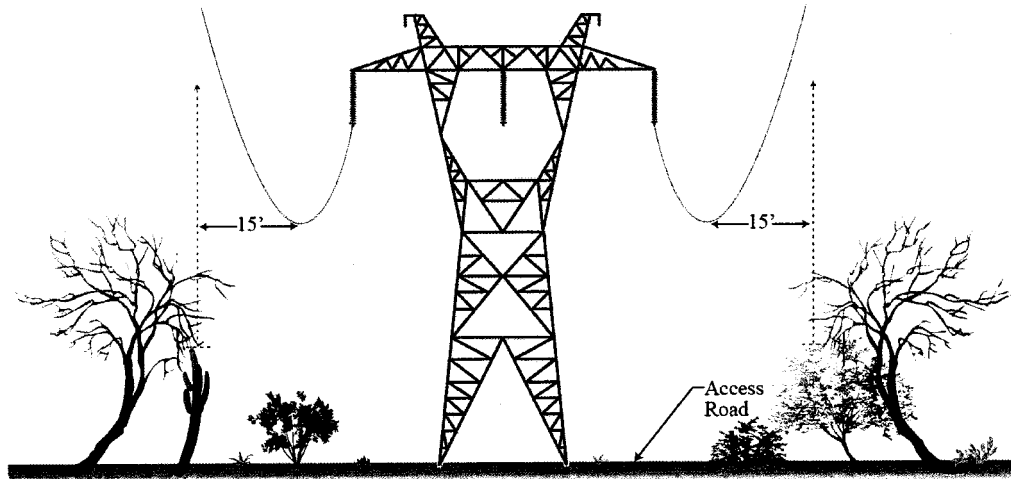
Where hazardous vegetation is identified, the target vegetation would either be removed entirely (in the case of grow-in, bend-in, swinging, or falling trees) or selectively removed (in the case of dense vegetation stands that may pose potential fire threats). Vegetation that does not meet conductor clearance requirements will be identified throughout the project right-of-way. All vegetation areas proposed for removal due to conductor clearance conflicts would be identified by APS and provided to the BLM project manager prior to initiation of vegetation removal activities. Additional stands of dense vegetation that would require selective or complete removal to minimize risk of arcing from smoke during a wildfire would also be identified by APS prior to initiation of vegetation removal activities.

Where terrain conditions provide for higher conductor clearances, typically between 50 and 100 feet above the ground, some small trees and tall shrubs (i.e., up to 25 feet in height at maturity) may remain in place throughout the right-of-way. Similarly, in the appropriate vegetation communities and terrain conditions (typically where conductors are more than 100 feet above the ground), all tree and cacti species may be allowed to remain in place throughout the right-of-way where conductors can still maintain the required conductor clearance.

To minimize the risk of vegetation beyond the limits of the managed rights-of-way damaging transmission facilities, an additional 100 feet on either side of the APS right-of-way (200 feet total) would be monitored and evaluated for hazardous vegetation. Where identified, hazardous vegetation will be removed selectively based on the height of the vegetation and its distance to the transmission line conductors. Zones for potential hazardous vegetation should be established and would be classified as low, moderate, and high potential, where a low potential for hazardous vegetation typically represents sparse or low-growing vegetation and high potential for hazardous vegetation typically represents areas of tall and/or dense vegetation growth adjacent to the right-of-way.

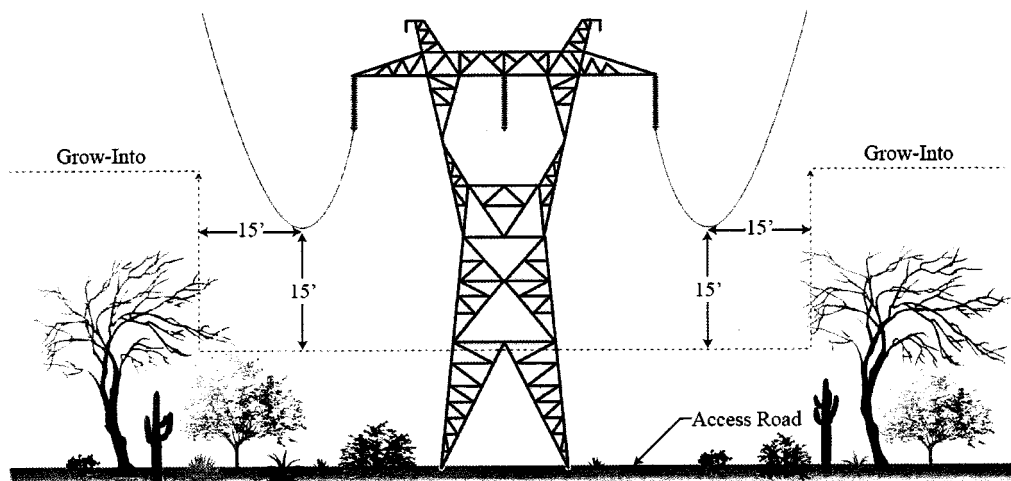
Four common hazardous vegetation scenarios are shown and described as follows:

- Bend-in trees (Figure B-2) are trees located outside and adjacent to the right-of-way and that have tops or branches that bend down or could bend down into the minimum clearance distance to the transmission line conductor.



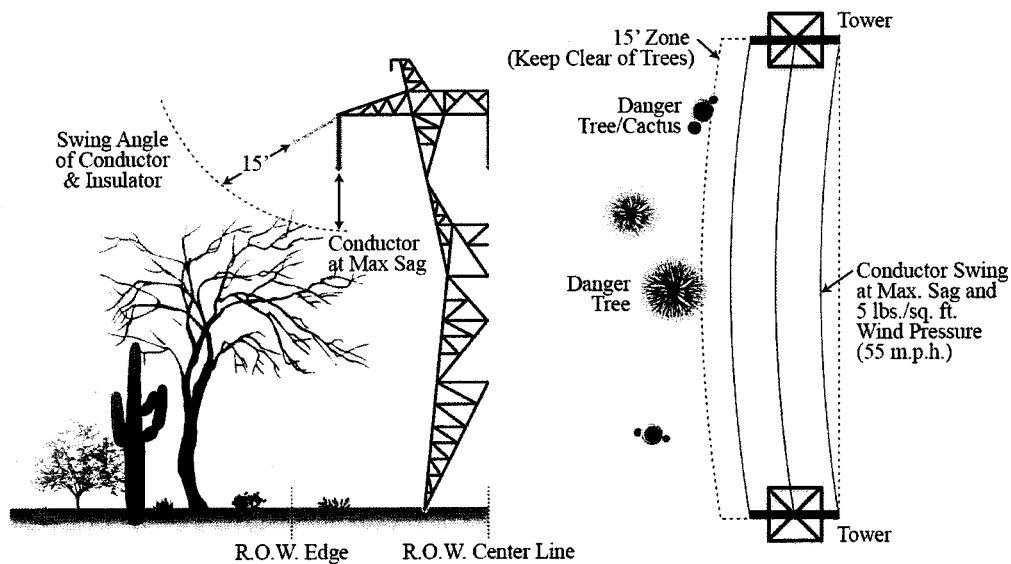
**Figure B-2. Bend-in trees**

- Grow-in trees (Figure B-3) are located within and/or adjacent to the right-of-way and that have grown or will grow horizontally and vertically into the minimum clearance distance to the conductor.



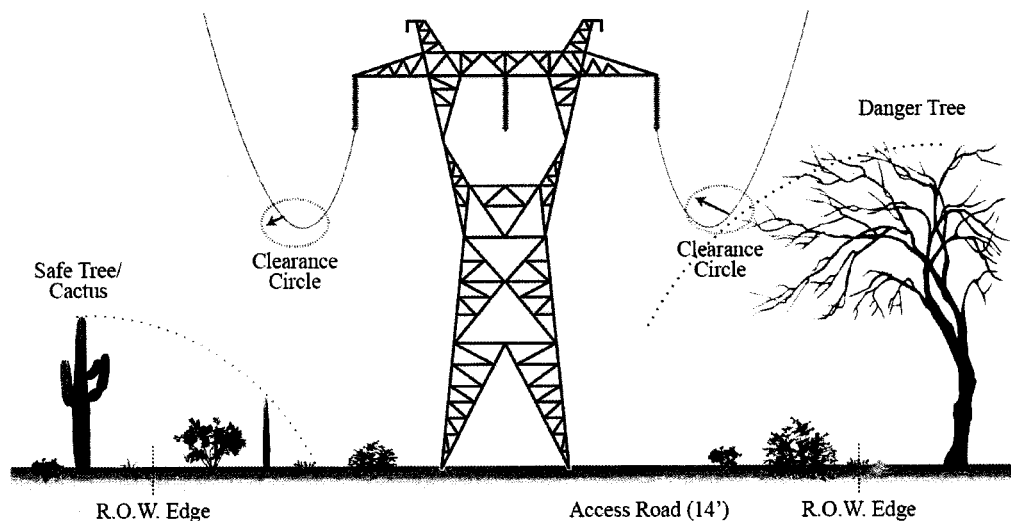
**Figure B-3. Grow-in trees**

- Swing-in trees (Figure B-4) are trees located off and adjacent to the right-of-way whose branches could violate the minimum clearance distance to the conductor as a result of the conductor being blown toward the tree.



**Figure B-4. Swing-in trees**

- Fall-in trees (Figure B-5) are any trees that, if they were to fall toward the transmission line, would extend into the minimum clearance distance to the conductor.



**Figure B-5. Fall-in trees**



### **2.1.1. Preserve-in-Place and Salvageable Plants**

During hazard vegetation identification and removal, crews should identify state-protected plants, such as saguaros and ironwood trees. If practicable, these plants should be preserved in place because of their limited regional distribution and importance to ecological function. Where it is not practical for these plants to be preserved in place (i.e., where there are clearance, access, or operation/maintenance conflicts), a reasonable attempt should be made to salvage the plants for replanting outside of the right-of-way, commercial nurseries, or for public adoption. Any plant identified for salvage and planting outside of right-of-way or identified for destruction would be coordinated with the BLM or land manager, and any plant salvage must be conducted by a BLM-approved plant salvage contractor in accordance with BLM plant salvage requirements. Specific dates and locations would be established for the public or commercial nurseries to salvage protected plants; this would need to be coordinated with the BLM.

Any necessary post-salvage maintenance for transplanted plants would be coordinated with the BLM and would continue until the success criteria (to be agreed upon between APS and the BLM) for transplanted plants have been met.

### **2.2. Establishment of Structure Work Areas and Maintenance Pads**

As a part of routine transmission line maintenance, maintenance crews require access to structures to repair damage to the frame of the structure, repair or replace structure hardware (e.g., insulators, tower members, etc.), and conduct overall inspections for each structure. Typically, maintenance on the transmission lines can be completed safely using live-line techniques, thereby avoiding an outage to the critical transmission line infrastructure. High-reach boom trucks, along with other equipment, are typically used to conduct these activities. For self-supporting lattice structures, this requires adequate space be available at each structure site so the high-reach boom truck can be positioned to either side of the structure and reach up as needed for maintenance crews to access overhead groundwires, conductors, etc.

To establish appropriate working areas where maintenance crews can safely access structures for routine maintenance and emergency repairs, an area of 40 feet by 40 feet beyond the perimeter of the existing structure foundation would be cleared of all vegetation. In addition, this 1,600-square-foot area provides a critical fuel load reduction and fire break for transmission line facilities, and potentially vulnerable hardware in the event of wildland fire proximate to and within the project right-of-way. This 40-foot by 40-foot cleared area provides the minimum area necessary to reduce the risk of potential damage to transmission facilities in the event of wildland fire in the right-of-way.

### **2.3. Vegetation Removal Methods**

As mentioned previously, methods for initial removal will vary based on the type of vegetation, terrain conditions, management objectives, and other resource considerations in the area of the removal. The amount of necessary vegetation removal varies from removal of all vegetation (e.g., within 40 feet of existing structure foundations) to reduce the potential of fire or tripping hazards, to the removal of singular, tall growing vegetation or hazard trees.

Vegetation removal would be either selective or nonselective (i.e. complete vegetation removal), based on the site requirements. In areas that require complete vegetation removal, nonselective methods may be used. Outside of the 40-foot by 40-foot area surrounding existing structures, most areas are suitable for selective manual vegetation removal methods.

The specific method(s) used to remove vegetation will be selected based on a number of factors, including safety, cost, effectiveness, site characteristics, target vegetation, and potential environmental impacts. The following subsections provide descriptions of the various vegetation removal methods for the project.

### **2.3.1. Mechanical Methods**

Mechanical methods of vegetation removal would occur within the project right-of-way and would be used by APS, including grinders, masticators, or mowers on wheeled or tracked equipment to remove target vegetation. Mechanical methods are less selective in that all vegetation within the area treated is affected. The majority of the project area would be treated using mechanical mowers and/or masticators; however, areas where the masticator cannot gain access, or where sensitive resources occur, manual vegetation removal methods (i.e., hand crews) would be utilized.

Mechanical methods employ machines to remove or control target vegetation. Tracked equipment would be used where needed to minimize environmental impacts to erodible or compressible soils. Because of the large construction equipment used, this method would be used in areas with minimal resource conflicts; the use of machines may be restricted to patches of target plants. Typical equipment used for mechanical removal methods may include mowing, blading, bucketing, backhoes, grinders, masticators, and fire safety equipment.

### **2.3.2. Manual Methods**

APS would use manual vegetation removal methods (hand crews) to remove hazard vegetation (danger trees) outside of the right-of-way and for some vegetation removal in areas not recommended for mechanical treatment within the right-of-way. Hand crews would consist of APS qualified personnel or outside contractors certified as line clearance tree workers. Manual vegetation removal would include the use of hand tools (chain saws, hand saws, rope) to cut branches and trunks of vegetation.

In addition to vegetation removal using hand tools, manual labor may be used to remove target vegetation and noxious weeds by hand. Manual methods are constrained by vegetation conditions (e.g., density) and topography. Typical equipment used for manual removal methods includes chainsaws equipped with industry standard spark arrestors, handsaws, pole saws, hand axe, hoes, bucket truck (where necessary), and fire safety equipment.

Manual vegetation removal operations typically result in the creation of slash (i.e., individual limbs or stumps of trees to be used as vertical mulch on the right-of-way without chipping), which is typically designed to reduce fire hazard or to improve aesthetic appeal.

## **2.4. Vegetation Disposal**

Once vegetation is removed, various disposal methods are used to disperse the wood and debris. The objective in vegetation disposal is to dispose and/or distribute the slash and remove vegetation material in a cost effective and efficient manner that minimizes impacts to plant and wildlife species on BLM land while also minimizing fire risk within the transmission right-of-way.

When determining the appropriate disposal method, land uses, terrain, aesthetics, fire concerns, and species concerns would be considered. The disposal method listed below is a sampling of all possible methods, for the purposes of analysis of effects to species. Where possible, stumps from tree removal would be cut flush to the ground. Where this is not possible, stumps would be cut within 6 to 12 inches of the ground, based on site-specific conditions. No slash or logs would be placed within 25 feet of the high-water mark of streams or other bodies of water and all areas with the potential for flowing water (culverts, ditches, washes, etc.) would be kept free of slash, logs, and debris resulting from vegetation removal operations. Logs would remain in the right-of-way or would be chipped and would not be hauled offsite by APS.

### **2.4.1. Mechanical Vegetation Removal Disposal**

When a mower is used for routine vegetation maintenance, the mower typically masticates the tree or vegetation into small chips. The chips are broadcast across the corridor to a depth of no greater than 4 inches.

### **2.4.2. Manual Vegetation Removal Disposal**

As described above, manual vegetation removal methods typically include the use of chainsaws and/or handsaws to cut tree limbs and trunks and/or cacti where hazards occur. This typically results in large debris (either full trees which have been felled or large limbs removed from trees within or adjacent to the right-of-way) characterized as slash that is dispersed across the right-of-way or mulched/chipped for dispersal across the right-of-way. Where manual methods are needed for vegetation removal, the following procedures and measures would be adhered to when disposing of vegetation:

- Limbs would be lopped and scattered throughout the immediate area (within and adjacent to the right-of-way, depending on the location of the removed tree) in a manner such that debris lies within 18 to 24 inches of the ground. Logs are cut to manageable lengths of 8 feet or less and left within or adjacent to the right-of-way off of access routes.
- Mulching and broadcasting slash may be used where resource concerns allow, and where terrain conditions allow for a chipper to chip and broadcast mulch onsite, with chip piles no deeper than 4 inches.

Where tree or cacti limbs, logs, or stumps would be felled and lay across existing BLM lands or transmission line maintenance roads, these tree limbs, logs, or stumps would be removed from roads so as not to impede public access or APS maintenance activities. It should be noted that some cactus species could take root in the soil if spread on the ground and would need to be scattered in a manner as to not grow in close proximity to any maintenance or public access.

### 2.4.3. Saguaro Transplanting Guidelines

Saguaros may be required to be removed as part of the construction and vegetation maintenance along this power line. Saguaros around power lines pose a safety threat to the public as they are highly conductive to electricity due to their height and high water density. Saguaros that are in close proximity to a power line conductor can electrocute someone who comes into contact with that saguaro, or the saguaro can arc to the power line conductor, tripping the line. These circumstances pose a safety hazard, thus necessitating saguaro treatment under the power line conductors. APS will treat saguaros using the following methods:

1. Tall Saguaros underneath the power lines and to 50 feet outside of the outermost wires require removal, except in areas where vegetation is far below the power lines due to a canyon or slope.
2. Saguaros within an approximately 100-foot radial distance from the footers of the power line towers may be salvaged. It was determined that this area, under many circumstances, is safe for salvage. Saguaros outside of the 100-foot radial distance may be unsafe to salvage and would require direct removal of the plant through hand crew cutting or mulching with a mower.
3. Saguaros within 31 feet of one of the conductors will not be salvaged because it was determined unsafe to do so at this distance, due to the electrical field and arcing potential of the wires, conductivity of the salvaging equipment, and the distance needed to operate the equipment safely.
4. APS staff and the transplanting contractor will determine the saguaros that may be salvageable. Factors such as terrain, access, health of the saguaro, and the number of arms on a saguaro, will determine whether a saguaro may be salvaged within the 100-foot distance around the power line towers. Salvage potential of a saguaro will be determined on an individual plant basis.
5. The transplanting contractor, through coordination with APS, will flag all saguaros to salvage prior to initiating the saguaro salvage and removal portion of the vegetation work. The BLM staff will be given the opportunity to review the flagged saguaros and provide comment.
6. Salvaged saguaros will be moved to a holding site designated by the BLM; saguaros will then be donated to nonprofit agencies or municipalities.
7. The transplanting contractor will obtain a Removal and Transportation Permit from the Department of Agriculture for the saguaro salvage operation.
8. All saguaro treatment will be conducted within the permitted right-of-way for these lines.
9. All cultural sites will be located and flagged with a 50-foot buffer prior to saguaro removal and relocation.
10. If a saguaro occurs in a cultural site, the saguaro will not be relocated or treated using mechanical mowers. Saguaros in cultural sites that are within 22 feet of the conductors at maximum load conditions will require removal using mechanical mowers or hand crews.

Saguaros greater than 22 feet from the conductors at maximum load conditions that occur in cultural sites will be left onsite.

11. Saguaros for which any portion of the plant comes within 22 feet of the power line conductors at their maximum load conditions will require removal using mechanical mowers or hand crews. Mechanical mowers will be used to mulch the saguaro in most cases, but hand crews may also be used. If a saguaro is present within a cultural site, then only hand crews will be used.
12. Where possible, APS will relocate saguaros that meet all the following criteria:
  - a. The saguaro is less than or equal to 10 feet in height
  - b. The saguaro is within the wire zone of the lines or could potentially grow to become a hazard to the lines in the future
  - c. The saguaro is greater than 22 feet from the power line conductors at their maximum load conditions
  - d. The saguaro does not occur within an archaeological site
  - e. Terrain, access, and other environmental or logistical factors are favorable to relocation of the saguaros
  - f. The saguaro is in good health
13. Saguaros that do not meet the conditions of #11 or #12 will remain onsite; namely, saguaros that are greater than 10 feet tall, are greater than 22 feet from the power line conductors and their maximum load conditions, are determined unsuitable for relocation, and/or that occur within an archaeological site. These saguaros could be potentially treated in the future if they grow within the 22-foot violation distance.
14. Saguaros to be relocated will be moved to an area absent of cultural resources outside of the wire zone and away from the low sag area for these lines.

### 3. ONGOING MAINTENANCE

Ongoing maintenance is crucial to sustaining a safe environment and meeting the long-term goals following the initial vegetation removal along the transmission line rights-of-way. Current APS practices reference ANSI A300 Standard for Tree Care Operations for managing plant communities and establishing maintenance actions. APS will establish a routine vegetation management and right-of-way maintenance cycle for the duration of the right-of-way grant. This routine vegetation management and right-of-way maintenance cycle would be conducted every 5 years within BLM lands, and would focus on the identification and removal of potentially hazardous vegetation and noxious weeds, maintenance of transmission structures and associated hardware, and maintenance of project access roads.

To conduct vegetation and right-of-way maintenance activities, APS would use existing roads either built for the construction of the transmission lines, or BLM land access roads approved by the managing agency. APS would not create any new roads or upgrade existing roads for the purposes of maintenance, and would make every effort to minimize disturbance within the right-of-way during routine maintenance activities.

This section discusses the anticipated activities for vegetation management, structure and hardware maintenance, and access road maintenance. These activities are anticipated to continue for the full term of the right-of-way grant, and are described below.

### **3.1. Vegetation Management**

After the initial vegetation removal has occurred and the desired right-of-way baseline condition has been established, remaining vegetation and new vegetation growth within the right-of-way would be managed in order to achieve the desired operating condition, which is generally characterized by stable, low-growing native vegetation free of noxious weeds. This stable, low-growing native vegetation community would typically be represented by early- to mid-seral stages of native herbaceous plants, shrubs, cacti, and low-growing trees, as well as some climax species of low-growing trees and cacti that do not encroach within the conductor clearance requirements for higher voltage transmission lines.

Management recommendations for vegetation within and adjacent to the rights-of-way would be based on an understanding of the 5-year maintenance cycle, typical growth rates of the vegetation within and adjacent to the rights-of-way, and biomass buildup that could provide hazardous fuels for wildfire. Vegetation proposed for removal during the maintenance cycles includes the following:

- Vegetation that has either encroached, or has the potential to encroach within the conductor clearance requirements within the next 5 years
- Dense stands of vegetation that could pose a hazard to the facilities due to arcing potential in the event of a wildfire (selective or complete removal) within the next 5 years
- Any vegetation within the established transmission structure maintenance pad area (i.e., within 40 feet of the foundation perimeter of a transmission structure)
- All noxious weeds within the rights-of-way, managed to a level of containment

Over the course of several vegetation management and right-of-way maintenance cycles, it is anticipated that low-growing native vegetation cover would become the predominant condition within the right-of-way. Upon establishment of this condition, it is likely that cyclical vegetation removal activities could be anticipated in accordance with the growth rates of the native species present on the right-of-way, which would aid APS in planning for vegetation management activities.

Fuel load management within the right-of-way would be a critical component of the vegetation management program. Where dense stands of vegetation occur within the right-of-way, the potential for arcing as a result of smoke plumes in the event of a wildfire exists. In these areas, vegetation would need to be selectively removed, or in some cases completely removed, in order to minimize the risk of arcing causing an outage on the transmission lines during a wildfire event. Areas of dense vegetation requiring selective or complete removal would be coordinated with the managing agency during each vegetation management and right-of-way maintenance cycle.

In addition, all areas within 40 feet of the transmission structure foundations would be managed for a bare-ground condition. This bare-ground condition provides the necessary vehicle access

for each structure to repair and/or replace facility hardware and provide the necessary work space for periodic repairs to the structures as well.

Similar to initial vegetation removal methods, vegetation management removal methods consist of chemical, manual, and mechanical methods, and will vary based on the type of vegetation, terrain conditions, management objectives, and other resource considerations in the area of vegetation management.

Below is a description of the various vegetation management methods that would be applied to the project.

### **3.1.1. Chemical Methods (Herbicide Use)**

APS does not use Chemical Methods for vegetation management; Manual and Mechanical Methods are proposed to be used for the project.

### **3.1.2. Mechanical Methods**

Mechanical methods of vegetation management would typically be applied within the right-of-way where dense concentrations of vegetation have resprouted after initial vegetation removal, or where hazard trees are identified and accessible by the necessary equipment (i.e., mowers, grubbers, etc.). After the implementation of mechanical methods in these areas, chemical treatments are typically applied to maintain vegetation management objectives within the right-of-way.

### **3.1.3. Manual Methods**

Manual methods of vegetation management are typically applied to the removal of hazard trees or noxious weeds within or adjacent to the right-of-way, where required.

### **3.1.4. Noxious Weed Management**

APS will consult with the BLM regarding noxious weeds within their right-of-way on public lands. The BLM lands manager also may contact APS to report on the presence of noxious weeds within their right-of-way. APS will be required to monitor and control noxious weeds at a level that does not exceed the density or extent of conditions identified during initial vegetation removal for the full term of the right-of-way grant, and will eradicate any new infestation that is demonstrated to be the result of project operation or maintenance. APS will not be responsible for the following:

- Eradication of pre-existing noxious weed infestations
- New or recurring noxious weed infestations caused by the spread of noxious weeds from surrounding and/or adjacent lands, unless it can be demonstrably shown to be the result of disturbance caused by the operation or maintenance of the project
- Noxious weeds introduced into the project area by activities other than project operation and maintenance (e.g., recreational use, grazing, other construction projects, etc.), natural

occurrences (e.g., fire), noxious weeds outside the project right-of-way, or noxious weeds along existing access roads not improved by the project

Operations personnel will be trained in the identification of predominant noxious weed populations, and APS will control the weeds on a case-by-case basis. If determined necessary, a report on actions taken will be provided to the managing agency in the form of Monitoring Reports on a predetermined schedule.

The current primary APS standard for noxious weed abatement is for vehicle cleaning before and after leaving the ROW.

### **3.2. Structure and Associated Hardware Maintenance**

Routine structure and hardware maintenance is typical for repair or replacement of individual components (no new ground disturbance), performed by relatively small crews using a minimum of equipment, and usually is conducted within a period from a few hours up to a few days.

Workers require access to the damaged portion of the line to allow for a safe and efficient repair of the facility. Equipment required for this work may include 4-wheel drive trucks, material (flatbed) trucks, low-reach boom trucks, high-reach boom trucks, or man lifts. This work is typically scheduled and required due to issues found during routine inspections. Typical items that may require periodic replacement on a lattice tower include insulators, hardware, and tower members.

APS plans to conduct maintenance on critical high-voltage systems typically using live-line maintenance techniques, thereby avoiding an outage to the critical transmission line infrastructure. High-reach boom trucks, along with other equipment, are used to conduct these activities. For lattice structures, this requires adequate space be available at each structure site so the high-reach boom truck can be positioned to one side or the other of the structure and reach up, as needed, for maintenance crews to access overhead groundwires, conductors, etc.

### **3.3. Access Road Maintenance**

Repairs to the right-of-way will be scheduled as a result of line inspections or will occur in response to a significantly degraded condition or an emergency situation. Where access is required for maintenance of the transmission lines, APS will maintain the approved access roads in a safe, useable condition. Right-of-way repairs include grading or repair of existing maintenance access roads and work areas and spot repairing sites subject to flooding, scouring, or significant erosion. Required equipment may include a grader, backhoe, four-wheel drive pickup truck, and a steel-tracked cat-loader or bulldozer. A cat-loader is equipped with steel tracks, whereas graders, backhoes, and trucks typically have rubber tires. If snow removal is necessary, equipment used shall be equipped with shoes to keep the blade 2 inches off the road surface to avoid damaging it. Where the ground is uneven at drainage crossings, special precautions will be taken to ensure equipment blades do not destroy vegetation.



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## **APPENDIX C: APS SAFETY GUIDELINES**

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Jack E. Davis  
President, Pinnacle West Capital Corporation, and  
President and CEO, Arizona Public Service Corporation

April 15, 2003

**To All Participating APS Non-Generation Contractors:**

You have either received a Request for Proposal or have been awarded a contract to perform services for Arizona Public Service Company. The health and safety of your employees, those of your subcontractors, APS employees and members of the public who may be on or near the jobsite is of particular importance to the management and employees of APS. Of equal importance is minimizing negative impacts to the environment where our constituents live and work.


The Agreement you have or will be entering into with APS contains various provisions about your obligation to comply with applicable laws and to conduct your activities in a safe and compliant way. The attached Program is presented to you in furtherance of these contract provisions. Nothing in this document is intended to alter or modify the Agreement.

The project in which you may be involved requires that all reasonable and prudent measures be taken to establish and maintain safe working conditions. We are taking this opportunity to reaffirm that you as an employer must provide your employees a "safe place to work" and that you, as an independent contractor, are responsible for the safety and well being of your employees, as well as others whom your services may impact. At a minimum, your activities and those of your subcontractors must comply with all applicable laws, rules and regulations affecting the environment, public health and work place safety and health.

Prior to your performance of the services called for in the Request for Proposal or Contract, a meeting will be held with APS representatives to discuss and review various contract requirements, including those pertaining to specific site regulations, safety, environmental considerations and potential hazards. APS personnel may bring to your attention applicable laws, rules, and regulations and may assist you in these important areas, but such actions by APS are not a substitute for, nor will they relieve you of, your responsibility to comply with all applicable federal, state, tribal and/or local laws affecting the environment, or the health and safety of your employees and our work place.

To complete this project without injury to your employees, our employees, the public, or damage to any property, equipment or facility, you will be required to identify and maintain an "area of safety" within which your services will be performed in compliance with all laws, ordinances, rules, codes and regulations. Both you and APS have a mutual interest in protecting the environment, the health and safety of our respective employees and the public and in protecting property from damage or loss. I am confident that if we cooperatively use our individual teams' talents to the fullest, we can complete this project safely.

Safety is the overriding value of our company. You are expected to perform your services in complete support of this value.



Jack E. Davis

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## PREFACE

APS' non-generation business unit is primarily engaged in the transmission and distribution of electricity through many substations and thousands of miles of overhead and underground transmission and distribution lines to the point of customer delivery.

As an independent contractor for APS, you must minimize potential safety and health hazards to your employees, to APS employees, and to others who may be on the jobsite, by following all applicable laws and regulations and using sound work practices for maintaining a safe and healthy workplace and environment.

APS considers the standards and rules of the Occupational Safety and Health Administration (OSHA) and Environmental Protection Agency (EPA) (and their state counterparts) to be minimum requirements that must be complied with at all times. Because each work area is unique in and unto itself, some areas or types of work could require steps that go beyond basic compliance with agency standards and rules. Examples where this may occur involve respirable, systemic and dermal hazards, electrical exposures, excessive noise and/or heat levels.

The following section lists some of the primary *federal* laws affecting the environment, health and safety with which you, as an independent contractor must comply, depending upon your contract work scope. In addition, you are required to comply with applicable state, Tribal and local rules, regulations and ordinances addressing the same or similar areas. However, the following list is a guide only and is not intended to be a complete list of laws that may apply to your services. As an independent contractor, you are required to identify and comply with all applicable laws, rules and regulations.

### MAJOR ENVIRONMENTAL, HEALTH AND SAFETY ACTS OF CONCERN

Hazardous Materials Transportation Act	DOT (HMTA)
National Environmental Protection Act	EPA (NEPA)
Noise Control Act	EPA (NCA)
Federal Insecticide, Fungicide and Rodenticide Act	EPA (FIFRA)
Resource Conservation and Recovery Act (and amendments) (RCRA)	EPA (RCRA)
Toxic Substances Control Act	EPA (TSCA)
Federal Air Pollution Act (Clean Air Act)	EPA (CAA)
Federal Water Pollution Control Act (Clean Water Act)	EPA (CWA)
Standard for Protection Against Radiation	NRC(10CFR20)
Comprehensive Environmental Response, Compensation and Liability Act	EPA(CERCLA)
Occupational Safety and Health Act	DOL(OSHA)
Federal Motor Carrier Safety Regulations	DOT (FHA)
Emergency Planning and Community Right-to-Know Act	EPA (EPCRA)

## Contractor Health and Safety Requirements

Safety is the **overriding** value of all aspects of our business. "Safety" includes protection of personnel from workplace hazards, protection of property from damage or loss, and protection of the environment. Together, we will provide a safe and healthy environment for our collective employees, APS customers and the communities we serve. APS views the health and safety of employees, contractors, subcontractors and members of the public as a core value to our success. The best interest of all parties is served when reasonable and prudent measures are taken to establish and maintain a "safe place to work". Each contractor and subcontractor is responsible and accountable for the safety and well being of its employees. At a minimum, all activities performed on behalf and in support of APS (and other activities performed on APS property or equipment) by contractors and their subcontractors must comply with applicable federal, state, tribal and/or local laws, ordinances, statutes, rules and regulations, including those promulgated by OSHA, ADOSH, ADEQ, and EPA. Additionally, the contractor and subcontractor safety programs and practices must meet all APS safety and health policies, procedures and program requirements.

Contractors and subcontractors are responsible and expected to take all reasonable and lawful actions deemed necessary to prevent accidents and losses. It is the expectation of APS that all parties cooperate fully with loss control programs implemented by APS. The following loss control components must be addressed prior to and during all services provided to the corporation.

- Participate in a conference with an APS representative between the award of the contract but prior to performing work under that contract. This pre-work conference allows both sides to discuss and review various contract requirements, including those pertaining to site regulations, safety, environmental considerations and potential hazards. APS personnel may advise of applicable laws, rules, etc., in the areas of importance. However, such actions do not relieve the Contractor of its responsibility to comply with all applicable federal, state, tribal and/or local laws, ordinances, statutes, rules and regulations.
- Each Contractor and subcontractor shall provide to APS representatives, upon request, evidence of past safety performance. This may include OSHA inspection results and citations, accident rates, Experience Modification Rates, and/or DOT-related inspections and citations. Such evidence may be requested prior to commencement of work.
- Each contractor and subcontractor shall provide, upon request, a written safety program or plan for service to be provided prior to the commencement of any work activities for by an APS representative. At a minimum, the contractor's safety and health program or plan must meet or exceed the requirements of the APS programs.
- The contractor shall submit, upon request, written verification that all contractor and subcontractor employees have received and demonstrated competency in the required training and refresher training of regulatory agencies and APS as applicable to the services being provided. Written documentation of employee safety training records, medical examinations, etc. shall be provided as requested. A list of potentially applicable training is provided in Attachment A.
- APS reserves the right to conduct periodic inspections of the work site to verify compliance with these requirements. All safety discrepancies discovered shall be abated by the contractor in a timely manner in accordance with regulatory or contract requirements, as applicable and appropriate.
- The contractor may be assessed the cost of any fines and/or penalty incurred by APS resulting from the contractor's non-compliance with safety regulations.
- Contractors, subcontractors and their employees who fail to comply with these requirements may be denied access to the APS project, facility or property and risk termination of the contract.

## **Safety Responsibilities**

The following section of this Program is separated into two primary parts, which are applicable to:

- All Contractors; or,
- Contracts involving Contractor work on APS Transmission or Distribution Equipment, their makeup components, or within APS rights-of-way or Property.

### **All Contractors**

Contractors, subcontractors and their employees shall:

- Understand and comply with all applicable provisions in their respective written safety programs or plans.
- Immediately notify the APS Designated Representative upon discovering any safety or health hazard or defect, the correction of which is APS' responsibility, and shall follow up with the APS Designated Representative until the identified hazard or deficiency is corrected.
- Immediately correct any safety or health hazard or defect identified by APS personnel if under the control of the contractor.

### **Contracts Involving Contractor Work on APS Transmission or Distribution Equipment or their Makeup Components (the APS system), or within APS rights-of-way or Property**

Accident prevention is the most important part of every contractor's job. The contractor shall:

- Provide a qualified electrical worker at all times while contractor or subcontractor employees are working with exposed, energized transmission or distribution equipment. The qualified electrical worker shall be the only person(s) who will perform physical, hands-on work on cables and/or other energized equipment.
- Observe Blue Stake requirements pertaining to all excavation operations in close proximity to underground facilities.
- Use only qualified utility electrical workers when performing hands-on work on energized cables, cables in conduit, manholes, or when excavation requirements necessitate the undermining of energized electrical equipment.
- Provide at least one English-speaking employee per crew at APS job sites. This employee must be bilingual (with appropriate second language skills) when the remaining members of the crew are non-English speaking.
- Designate a "Safety Instructor" to train & test all of the contractor's personnel as required by APS. The "Safety Instructor" shall participate in, and pass, with at least a 90%, an APS Accident Prevention Manual (and its successor manuals) training class.
- Provide required safety training, including a review of the APS Accident Prevention Manual to all contractor employees who perform work on APS facilities. Contractor and subcontractor employees shall be retrained on the expectations of the APS Accident Prevention Manual (APM) prior to beginning work as a part of an APS contract and when the APM is modified if still contracted. Contractor and subcontractor personnel who work on APS jobs shall have successfully passed the APS Accident Prevention Manual training class with a minimum of 75%.
- Provide APS with original documentation (i.e. tests, test results, class rosters including names and job classifications, etc.) indicating each employee's successful completion of the APS Accident Prevention Manual training prior to allowing the employees to work on APS projects.
- Impress upon contractor's employees the need for safety in every job.
- Provide time for and take an active part in safety meetings and discussions. This includes attending joint contractor/APS Safety Meetings coordinated by APS.
- Appoint a special accident investigator to work on an Accident Investigation Committee as needed.
- Periodically evaluate the safety performance of the contractor's employees.



- Provide appropriate responses to safety suggestions and document appropriate action to correct any unsafe conditions.
- Provide original documentation regarding the activities listed above as required by APS.
- **Contractor Qualified Electrical Workers**
  - Contractor must ensure qualified electrical workers are qualified to perform work on APS' Transmission and Distribution (T&D) system or its make-up components. The contractor is responsible for ensuring the qualified electrical workers performing work tasks have the proper knowledge, skills and abilities to safely perform work.
  - Contractor must have a written safety program and understand that APS will include the Contractor's Experience Modification (E-Mod) factor along with other performance indicators into selection matrices. The E-Mod factor must be provided annually on the anniversary date of the contract.
  - Qualified electrical workers, who in the opinion of APS are not performing competently or safely, will be removed from the job site and prohibited from performing work for APS. Should the contractor disagree with APS' assessment, a practical evaluation may be performed of the qualified electrical worker's abilities.
    - This practical evaluation will be conducted as determined by APS and may be witnessed by contractor
    - Contractor will be responsible for all costs related to the practical evaluation.
    - Only one (1) practical evaluation will be allowed per individual.
  - If apprentices are used on APS projects, the contractor is responsible for ensuring that the apprentices only perform work at the step for which they are qualified, (i.e. a "cold apprentice" shall not do hot work, etc.)

#### **Accident Prevention Manual (and its successor manuals)**

The APS Accident Prevention Manual sets forth the minimum requirements for safety-related training and workplace safety expectations. It is the responsibility of all personnel of those entities contracting with APS to know and comply with all rules in the APS Accident Prevention Manual while performing work under the contract. We share a role in developing and maintaining an effective safety program. The rules in this manual serve as the foundation for our safety program. Safety awareness and compliance with these rules, in concert with good common sense, are vital if all employees are to remain accident free.

**NOTE:** The safe working rules contained within the Accident Prevention Manual were originally prepared for use by APS employees. Accordingly, the use of the terms "employee", "employee of the Company", "employee in charge", "supervisor", "foreman", and similar terms, characterizations or classifications shall, in all instances, mean the employee, supervisor, foreman, etc. of the Contractor. Nothing contained in the manual is intended to create or imply that there exists an employer/employee relationship between the Contractor's employees and APS.

#### **Confined Space Entry**

A confined space is a space that:

1. Is large enough for a person to enter and perform work;
2. Has limited, or restricted, means for entry or exit; and
3. Is not designed for continuous occupancy.

Throughout APS facilities, that definition applies to most tanks, vaults, manholes, drums, silos, pits, boxes, heaters, compartments, ducts, etc.

The APS Confined Space Entry Program consists of conducting pre-entry inspections of any potential space prior to entry to determine whether the space is either a non-permit or a permit-required confined space. The pre-entry inspection must determine that the energy sources (electrical, hydraulic, pneumatic, kinetic) within the confined space are neutralized; that the confined space is "cleaned" as appropriate to minimize hazards; and to determine that the atmosphere within the space is considered and known from a safety and health standpoint.

"Entry Supervisors" certify confined spaces to be either non-permit or permit-required spaces for the expected duration of an entry into the space based upon the measured contaminants found, or that may be encountered, within the space. "Entry Supervisors" must:

- know the hazards that may be faced during entry including the anticipated reactions of people to those exposures;
- verify that the Entry Permit and/or Checklist is accurate;
- verify that a means to summon the appropriate rescue team is available and operable;
- remove unauthorized personnel from the confined space;
- determine that acceptable entry conditions exist and are maintained for the duration of an entry; and
- terminate the entry and cancel the permit when the job is completed or a condition is encountered that is not allowed in the space.

If determined to be a permit-required space, a trained attendant must be stationed outside the space to monitor for problems, summon rescue assistance if appropriate, maintain an accurate accounting of who is within the space, monitor activities outside the space that may affect employees within the space, and, if necessary, order evacuation of the space.

As an independent contractor, you are obligated to utilize a Confined Space Entry Program similar to what has been outlined above and that complies with OSHA regulations. This includes determining hazards, designating an "Entry Supervisor", and informing APS via the APS Designated Representative anytime unexpected hazards are encountered within a Confined Space.

### **Lockout/Tagout**

All servicing or maintenance that is performed on a machine or equipment **NOT associated with the APS transmission or distribution systems**, where the unexpected energizing, start-up, or release of stored energy could occur and cause injury, requires a work clearance (complete energy isolation). The APS Designated Representative will obtain all work clearances for the contractor. All contractor personnel shall follow APS procedures for group tagout and sign the Group Tagout Work Permit associated with the Group Hold Tag for the clearance prior to beginning any work where an exposure could occur. The authorized APS Designated Representative for the contract will maintain the Group Hold Tag and Group Tagout Work Permit.

All work to be performed **directly on the APS transmission or distribution system, or their make-up components**, where the unexpected energizing, start-up, or release of stored or induced energy could cause injury also requires a work clearance (complete energy isolation). The clearing process often requires Switching Orders for initial clearing of all associated lines and equipment. The APS Designated Representative will obtain all work clearances and switching orders for the contractor except that specially APS trained and authorized contract company personnel may request and obtain switching orders. All switching of energized conductors or equipment **MUST** be performed under the direction of the APS Designated Representative or the APS trained and approved contract company personnel.

## **Excavation and Trenching**

Contractors performing excavation and/or trenching work will ensure the following is performed as required to comply with OSHA regulations.

A trained "Competent Person" will be designated by the contractor to identify predictable hazards surrounding and within all excavations. This person must have the authority to authorize prompt corrective measures to correct identified problems and shall inspect each excavation prior to entrance each work-shift and after any hazard-increasing event such as rain, earthquake, etc.

Underground installations (telephone, gas, electrical, etc.) must be identified in accordance with Arizona Administrative Code requirements (included at A.A.C. Rule R14-2) designed to prevent accidental dig-ins prior to opening any excavation or trench. Any accidental dig-in must be reported to your APS Designated Representative. **NOTE:** Refer to Asbestos section of this document when Transite® pipe is encountered during excavation and/or trenching.

Excavated materials shall not be stored closer than 2 feet to an excavation. Adequate means of access and egress (ladder, ramp, etc.) shall be maintained no further than 25 feet from all workers working within excavations 4 feet or more in depth.

Persons working within an excavation must be protected from cave-ins by adequate shoring systems unless (1) the excavation is made in stable rock, the excavation is less than 5 feet deep, and the "Competent Person" determines there is no possibility of cave-in; or (2) the walls are sloped and/or benched to an angle not to exceed 34 degrees from horizontal.

All excavations, trenches, manholes, etc. opened and/or worked in must be protected using adequate signs, barriers, barricades, lighting and/or flagmen.

## **Scaffolding**

Scaffolding, when used by the contractor, shall be erected in conformance with all applicable OSHA scaffolding standards and a safe means of access and egress must be maintained. Contractors shall not use scaffolds erected by others without first obtaining permission through the APS Designated Representative; and completing a thorough inspection of the scaffold to ensure that it meets OSHA requirements.

## **Personal Protective Equipment**

The contractor shall ensure that its employees utilize appropriate personal protective equipment for the tasks performed. All contractor employees shall be required to wear hard hats and safety glasses equipped with full side-shields as directed in the APS Accident Prevention Manual. Hearing and respiratory protection in compliance with OSHA standards are required when dictated by environmental conditions or the work being performed. Substantial work shoes appropriate for the work being performed are mandatory in work areas. ANSI approved steel or fiberglass-toed safety shoes (or steel-toe shoe attachments) are required to be worn by employees who are exposed to substantial drop, compression or puncture hazards.

## **Housekeeping**

The contractor's interest in environmental, health and safety matters can often be predicted by the degree to which housekeeping is performed at staging and work areas. APS does not tolerate poor housekeeping practices as they result in employee injuries and reflect poorly upon our public image. The Contractor shall ensure that debris is contained and removed as often as required to prevent it from interfering with the safety of employees and/or the general public. In any event, containment and removal of debris shall be performed at least daily.

Additionally, hoses, welding leads, power cords, etc. must be protected against accidental tripping or shall be suspended above or below the walkway to avoid the creation of tripping hazards.

The contractor must ensure that personnel never create a hazardous condition by blocking access to emergency equipment such as fire hydrants, fire hose stations, fire extinguishers, electrical overcurrent protection panels, emergency vehicles, first aid equipment, eye/body wash stations, etc., with equipment, vehicles or supplies.

#### **Hazard Communication**

APS facilities may utilize some products classified as hazardous under OSHA's Hazard Communication Standard. The APS Designated Representative will, upon request, provide the contractor with a list of those products in use at the facility in addition to providing access to each product's corresponding Material Safety Data Sheet (MSDS). In accordance with your contract with APS, *the contractor shall provide* the APS Designated Representative with a list of all chemical, asbestos and/or radioactive products proposed to be brought on-site, in addition to their respective MSDS's, for review and approval prior to bringing such chemicals onto company premises or rights-of-way.

All solvents and other chemical cleaning agents, when used, must be collected, contained and properly labeled as directed by the APS Designated Representative. Under no circumstances are waste solvents and/or other chemicals to be dumped on the ground, down drainage systems, or placed in regular trash receptacles.

Toxic chemicals (e.g., PCB's, sodium hydroxide, sulfuric acid, ammonium hydroxide, etc.) and/or radioactive substances may be found within some APS facilities. Contractor personnel must become familiar with the applicable DOT, environmental, health and safety rules governing such substances prior to performing any work in the vicinity of these substances. Specific guidelines are available from the APS Designated Representative upon request.

Opened drums, bags and other chemical containers to be disposed of must be completely emptied by pumping and/or pouring any remaining contents into an appropriate waste receptacle. After emptying, both the empty container and any waste receptacle used to contain chemical residuals must be properly labeled and placed in an area dictated by the APS Designated Representative.

The contractor must immediately report any accidental spillage of hazardous substances, solvents or cleaning agents to the APS Designated Representative. The spillage must be contained and removed as directed by the APS Designated Representative.

All hazardous products not used before the end of the shift, or replaced in their original, labeled, primary containers before the end of that shift, must be placed in secondary containers and labeled to identify the container's contents and provide appropriate hazard warnings.

#### **Driving Commercial Motor Vehicles**

Prior to driving a commercial motor vehicle (CMV), the contractor's personnel shall have in their possession the required driver's license necessary for the type of CMV and the cargo or passengers being transported. Also, for non-CDL CMV equipment, a driver currently licensed with a Class D driver's license shall maintain a copy of the Road Test certificate in his/her possession for the type of CMV being driven. All CMV operators/drivers shall also have a current DOT Medical Certification card in their possession at all times while driving a CMV.

A CMV means any licensed, self-propelled or towed vehicle used on a highway in interstate and/or intrastate commerce to transport passengers or property when the vehicle:

- Has a gross vehicle weight rating (GVWR) or a gross combination weight rating (GCWR) of 18,001 lb. (AZ Intrastate) (10,001 lb. Interstate) or more; or
- Is designed to transport 16 or more passengers for hire, including the driver; or
- Is of any size and is used in the transportation of materials found to be hazardous for the purpose of the Hazardous Materials Transportation Act and which require the motor vehicle to be placarded under the Hazardous Materials Regulations.

CMV operators/drivers must accurately complete a Driver's Daily Inspection Report (DDIR) (vehicle inspection report) each day a CMV is driven.

Contractor personnel are restricted from operating a CMV beyond the following limitations:

#### **HOURS OF SERVICE LIMITATIONS**

Type	Limitation
Daily On-Duty Driving Hours:	No greater than 10 hours (aggregated) without having 8 consecutive hours off-duty.
Daily On-Duty (driving and non-driving) Hours:	No greater than 15 hours (aggregated) (12 consecutive hours if logging under the 100 air-mile exemption) without having 8 consecutive hours off-duty.
Accumulated Hours of Service	No greater than 60 (70) accumulated on-duty hours during the proceeding 7 (8) days. Hours of availability can be reset to 60 (70) hours following any 24 consecutive hour period off-duty.

Contractor employees who operate a CMV must maintain the proper records of duty status documentation as required by Federal Motor Carrier Safety Regulations.

All CMV's must have the required emergency equipment, registration, proof of insurance, and annual federal vehicle inspection certificate stored on-board at all times.

#### **Facility Access/Driving/Mobile Equipment**

Contractor personnel must observe posted speed limits within the facility (special conditions may warrant even lower speeds).

Contractor personnel must not be permitted to ride on any type of mobile equipment unless proper cages, seats, seatbelts or other personnel-securing devices are provided and used. Additionally, vehicles and mobile equipment with partially obstructed rear views shall be equipped with working backup alarms.

Special attention must be given to crane safety and OSHA regulations requiring minimum clearances from powerlines when material yards or set-up yards are located near powerlines. A signalman must be used when warranted due to proximity to overhead conductors.

#### **Aerial Equipment**

Only personnel who have been specially trained and authorized shall be carried aloft.

Mechanical platform boom tests must be conducted at least every 90 days and boom dielectric tests must be completed at least every 180 days. The date of the next test must be shown on a label and posted in the vehicle where it is visible to the operator or employee in charge of the aerial equipment.

### First Aid and Jobsite Emergencies

As required by your contract with APS, contractors must maintain proper first-aid readiness at the jobsite for their employees. Facility Clinics (where available) will *not* provide first-aid treatment or supplies to Contractor employees. Facility Clinic or emergency response personnel *may* be available for significant Contractor emergencies. The Contractor must be aware of the location of the nearest emergency medical facility as well as the facility's Emergency Evacuation Procedure, if established. You should review your contract with APS to confirm the availability of first aid and emergency resources. Any questions should be addressed to the APS Designated Representative.

### Fire Protection

Contractors must recognize all potential fire hazards, become familiar with on-site fire protection systems, and enforce applicable fire regulations prior to beginning and during "hot work" (cutting, welding, brazing, soldering, etc.). A fire watch may be necessary following "hot work" to detect and extinguish resultant smoldering or fires. The Contractor must maintain the proper size and type of fire extinguisher(s) in the immediate work area during any "hot work".

Contractor personnel must strictly adhere to all rules and regulations pertaining to the use, handling, transportation and storage of compressed gases and liquids.

Contractor personnel must also be aware that many ducts, vessels and pipes found within APS facilities are lined with combustible liners and that welding and cutting must be avoided until adequate precautions are taken to eliminate the risk of a fire within the equipment.

### Electrical Safety

The Contractor must provide, and require personnel to use, only non-metallic ladders near electrical facilities.

Contractors are also responsible for determining the location of underground and overhead energized conductors that exist within the work area prior to beginning work. The contractor must take the necessary safeguards to ensure the integrity of these systems as well as the proper separation of personnel, materials and equipment from these systems where appropriate.

Clearance (between objects) for overhead *high/low voltage* lines must be observed and applies to any direction, vertical or horizontal. *Tailboard meetings* must emphasize these issues continuously.

Non-electrically-qualified contract personnel must adhere to the *circle of safety* requirements as identified in the **Minimum Approach Distance (MAD)** chart below when using conductive equipment near energized sources (qualified electrical workers use distances listed in the appropriate MAD chart contained in APM):

Required Clearances for Overhead high-voltage Lines	
Voltage (Phase-to-Phase)	Minimum Required Clearances (Ft)
750 - 50,000	10
over 50,000 - 75,000	11
over 75,000 - 125,000	13
over 125,000 - 175,000	15
over 175,000 - 250,000	17
over 250,000 - 370,000	21

over 370,000 - 550,000	27
The above clearances apply in any direction, vertical or horizontal	

### Substation Entry & Exit

Contractor personnel may enter the energized sections of APS substations (or substations operated by APS) only after receiving permission and meeting one of the following two conditions:

- 1 - The contractor's employees have successfully completed and demonstrated proficiency in an APS training class provided by the APS Designated Representative or his/her designee that covers:
  - (a) The recognition of potentially energized components
  - (b) The proper use of electrical protective equipment that will be required by the work being performed
  - (c) The safety work practices to be utilized while performing specific work assignments within the substation
  - (d) What is safe to approach and what is unsafe to approach
  - (e) The maximum voltages involved within the substation
  - (f) The Minimum Approach Distances (MAD) to apply
- 2 - Any contractor employee who is under the direct (i.e. visual observation) supervision of a qualified worker who has successfully completed and demonstrated proficiency in the training listed above.

Entry into any substation or switchyard for the following reasons must be reported to the APS Energy Control Center (ECC) at 602-250-1070 prior to entry:

- To perform work within 30 feet of electrical structures (i.e. transformers, lolly columns, control houses, overhead bus, reactors, transmission lines, towers, poles, etc.);
- To work using any type of aerial equipment;
- To perform trenching and/or excavation services.
- Any work or access of an EHV substation or switchyard rated at 235 kV or higher.

The APS Designated Representative shall issue each contractor who is not continuously escorted by an APS employee a completed "APS Substation Unescorted Access Permit", a copy of which shall be maintained on-site during any substation entry.

The contractor must ensure that a contact number (cellular telephone number) is provided for contact purposes and the phone must be on and maintained onsite while contractor employees remain within the substation.

**Note:** Some substations are monitored and alarmed for security purposes. Your APS Designated Representative must pre-arrange unescorted contract work within these substations/switchyards by contacting Pinnacle West Corporate Security at 602-250-2222 and approve access prior to entering these substations. Should multi-day access be required, you may be instructed to notify Pinnacle West Corporate Security prior to each entry of certain substations/switchyards.

Persons entering or exiting the substation must immediately lock the gate behind them to prevent an unauthorized entry. Access gates shall be attended (within 20 feet) or locked at all times.

Contractor personnel must not enter a substation control house unless permission is granted by the APS Designated Representative AND the work being performed requires access to it.

Contractor personnel must be instructed to immediately notify ECC at 602-250-1070 if they observe any safety-related condition (such as leaks; damaged fencing, damaged gates, unauthorized entry, etc.). They must also understand that they are not to leave an unsecured substation until it has been secured or until they are relieved by APS personnel.

Contractor personnel must not store mobile equipment, materials or supplies within a substation without prior approval by the APS Designated Representative. Note: APS assumes no responsibility for the safekeeping or damage of contractor materials stored on its property.

Contractor personnel must ensure that the worksite is secured and the gates are locked upon leaving. If ECC was notified upon initial entry, it must be contacted upon exit and informed that "all gates are secured and all personnel are out" of the substation.

### Asbestos

Some APS Facilities have asbestos-containing materials in use. These materials may be present in the form of thermal system insulation (piping, etc.), gasketing, duct expansion joints, transite pipe, transite cooling tower panels, ceiling panels, roofing materials, and asphalt or vinyl flooring. Products of this or similar types **must be assumed to contain asbestos** until proven otherwise. Contractor personnel shall not disturb any such materials at any time unless directed to do so by the APS Designated Representative (after consultation with appropriate APS EHS personnel) AND your employees have met the training requirements imposed upon handlers of asbestos and other asbestos containing materials (see applicable OSHA regulations). You must notify the APS Designated Representative anytime you or your employees encounter thermal system insulation or surfacing materials which have been disturbed and could potentially release fibers into the work area. OSHA and EPA have enacted rigid health and safety standards designed to minimize exposure to asbestos and the Contractor and his/her personnel must adhere to these standards.

### Caution and Danger Demarcation

Contractors must ensure that their personnel are completely familiar with, and follow the warning implications behind, the various colored barrier tapes used to denote caution and danger areas. Red barrier tape with DANGER tags attached indicates a dangerous condition within the taped area. Entrance to the taped area is prohibited without the authorization of the individual whose name appears on the DANGER tag. **Unauthorized entrance into a Red barrier taped area is considered to be a serious safety violation and will not be tolerated.** Yellow, or yellow and black, barrier tape with CAUTION tags attached indicates that caution is necessary within the taped area. Entrance is permitted as long as personnel take the necessary precautions to protect themselves from the hazardous condition(s). These precautions may include waiting to enter the taped area until the hazard is corrected or the hazardous operation is completed. The lack of DANGER or CAUTION tags does not change the meaning of the colored barrier tape. Barrier tape is to be removed immediately upon removal or correction of the hazardous condition.

### Reporting Accidents

Contractors must report all personal injury accidents and those accidents that result in property damage that involve work performed for APS, or at APS work areas, to their APS Designated Representative in writing as soon as practical and, in any case, prior to the end of the day's work. APS may assess the incident and shall provide any necessary reporting to the Arizona Corporation Commission. Contractors are responsible for communicating with all other regulators as required after an accident, but shall notify the APS Designated Representative prior to any such notification.



APS reserves the right to conduct and/or facilitate event investigations as deemed necessary. APS expects, and requires, the full cooperation of contracting companies and their employees and subcontractors with those conducting the investigation.

#### **Radiation Safety**

Contractors must be aware that APS utilizes radiation sources in some density and level gauges located within some facilities. These areas are marked with the 'radiation propeller' universal symbol as well as labeling warning personnel to remain a minimum of 3 feet away. Work necessary within 3 feet of a source, or damage to a radiation source, requires the Contractor to notify the APS Designated Representative prior to such work.

**APPENDIX D: OTHER SPECIAL RESOURCE  
CONSIDERATIONS AND MITIGATION MEASURES**

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## **1. INTRODUCTION**

Appendix D of this POD provides an overview of other special environmental resource considerations associated with the construction, operation, and maintenance of the project and the mitigation measures that will address those considerations. Information included in this appendix addresses existing and planned land use (recreation and grazing), visual resources, wild horses and burros, and noise. Additional information regarding applicable mitigation measures can also be found in Appendix A – Construction Considerations.

## **2. OTHER SPECIAL RESOURCE CONSIDERATIONS AND APPLICABLE MITIGATION**

### **2.1. Land Use**

Land use impacts include those that would displace, alter, or otherwise physically affect existing or planned land use. Since the transmission line is located primarily on state and BLM land and is adjacent to existing facilities where feasible, it is anticipated that these impacts will be associated primarily with short-term effects to recreational users during construction, and limited disturbance to grazing activities and grazing allotments as described below. Impacts to land use on private land are primarily associated with effects to agriculture.

#### **2.1.1. Recreation**

A primary goal of the BLM is to manage developed and undeveloped recreation experiences and opportunities while also protecting other resources. In general, impacts to recreation use that may occur as a result of the construction and operation of the project include disturbance and/or disruption to recreational activities, especially during construction (off-highway vehicle use, hunting, hiking, and special events, etc.), and the effects associated with increased long-term public/recreational access.

Key mitigation measures designed to minimize impacts to recreation and that will be implemented for the project include, but are not limited to, the following:

- All supervisory construction personnel will be instructed on key areas of potential concern identified by the BLM, approved mitigation measures, and established protocols regarding encounters with recreational users during construction.
- Notification and updates will be provided to the BLM regarding construction activity locations and times. The construction contractor will work directly with the BLM Authorized Officer to ensure that conflicts with ongoing activities and any special events are avoided or minimized to the degree possible. Signs will be posted in the project area to notify users of the construction activities (see also Appendix A2 – Flagging, Fencing, and Signage Plan, and Appendix A3 – Transportation Management Plan).
- All movement of construction vehicles outside of the right-of-way will be restricted to predesignated access, contractor-acquired access, or public roads.

- All construction sites and access roads shall be clearly marked or flagged at the outer limits prior to the onset of any surface-disturbing activity. All personnel shall be informed that their activities must be confined within the marked or flagged areas.
- In areas determined to be critical by the BLM Authorized Officer, speed limit signs will be clearly posted, and these limits will be adhered to by all construction personnel.
- In select areas, all new access roads not required for operation and maintenance will be permanently closed using the most effective and least environmentally damaging methods appropriate to that area, in accordance with BLM requirements. This will limit new or improved accessibility into the area.
- Fences and gates will be repaired or replaced to their original predisturbed condition as required by the BLM Authorized Officer, if they are damaged or destroyed by construction activities. New temporary and/or permanent gates will be installed only with the permission of the BLM.

### **2.1.2. Grazing**

The project crosses rangeland suitable for grazing in Maricopa County. The BLM has established management guidelines for maintaining these rangelands with respect to grazing, the primary focus being the sustained health of rangelands while managing for multiple use(s) and watershed function and health. In order to support the protection of these rangelands, BLM field offices in Maricopa County have established grazing allotments.

Key concerns regarding the potential effects to rangelands and grazing allotments include the potential for disturbance/harassment of livestock or limiting the movement/working of cattle (e.g., fencing, temporary gates, corrals) during construction, construction related disturbance that could result in reduction to viable forage, the spread of noxious weeds, and damage and/or alterations to existing rangeland improvements. In addition to the mitigation measures identified in Appendix A3 – Transportation Management Plan, and Appendix A4 – Fire Protection Plan, several key mitigation measures have been identified to address potential concerns related to grazing that include the following:

- At least 30 days prior to construction, the Proponent will assist the BLM in the notification of all livestock grazing permit holders affected by the construction of the transmission line. Information provided to each holder will include a general description of project facilities and construction activities, and the anticipated schedule for these activities.
- All supervisory construction personnel will be instructed on current livestock grazing practices and activities in areas potentially affected by construction. Included in this instruction will be policies regarding encounters with livestock or individuals moving or working with livestock, and the protocols and measures to address potential issues associated with grazing.
- Watering facilities (tanks, natural springs and/or developed springs, water lines, wells, etc.) will be avoided to the extent possible. Should watering facilities be damaged or destroyed during construction activities, the construction contractor will repair or replace

the facilities to their predisturbed condition as required by the landowner or BLM Authorized Officer.

- Fences and gates will be repaired or replaced to their original predisturbed condition as required by the landowner or BLM Authorized Officer if they are damaged or destroyed by construction activities. New temporary and/or permanent gates will be installed only with the permission of the landowner or the BLM. Temporary gates will be removed following construction completion.

## **2.2. Visual Resources**

Visual impacts associated with the construction of the project include the effects to the quality of scenic resources, and the views from sensitive land use and recreation areas or sites (including scenic travel routes). The BLM has established Visual Resource Management objectives to assist in the management of public lands in a manner that protects the quality of scenic values and directs the level of acceptable change to the landscape. The BLM encourages the development of linear facilities and rights-of-way, such as the project, in designated areas. The visual impacts expected to occur as a result of the project are based primarily on the introduction of new facilities in areas of higher scenic quality when visible from sensitive viewing locations.

Through the selective location of the project adjacent to existing facilities (where possible), the use of dulled-metal finish on structures, the use of nonspecular conductors, and the implementation of other visual mitigation (see Section 6 of this POD), these impacts will be minimized to a large degree during the siting, engineering, and design of facilities. Additional key mitigation measures and guidelines that will be implemented during the construction of the project that are designed to reduce visual impacts are identified in other portions of the POD and address minimizing new disturbance, controlling erosion, and restoring disturbed areas (see Appendix A3 – Transportation Management Plan, Appendix A6 – Erosion, Dust Control, and Air Quality Plan, and others).

Several of the key mitigation measures identified to address potential concerns related to visual resources include, but are not limited to, the following:

- In select areas, there will be no blading of new access roads in the area of construction and operation. Existing crossings will be utilized at perennial streams, National Recreational Trails, and irrigation channels. Off-road or cross-country access routes will be used for construction and maintenance, which will minimize ground disturbance impacts. These access routes must be flagged with an easily seen marker and the route must be approved in advance of use by the Authorized Officer.
- The alignment of any new access roads or overland routes that may be identified during construction should follow the designated area's landform contours where possible, providing that such alignment does not additionally impact resource values.
- In select areas, all new access roads not required for operation and maintenance will be permanently closed. New access roads not required for operation and maintenance of the project and/or other planned facilities will be closed using the most effective and least environmentally damaging methods appropriate to that area in accordance with BLM requirements. This will limit new or improved accessibility into the area.



- All movement of construction vehicles outside of the right-of-way will be restricted to predesignated access, contractor-acquired access, or public roads.
- All construction sites and access roads shall be clearly marked or flagged at the outer limits, prior to the onset of any surface-disturbing activity. All personnel shall be informed that their activities must be confined within the marked or flagged areas.
- In construction areas, as specified by the BLM, surface restoration will occur. The method of restoration will normally consist of returning disturbed areas back to their natural contour, reseeding, and the installation of erosion control measures (to the degree possible, and if required).
- To minimize disturbance to vegetation resources and reduce visual contrast in select areas, clearing of trees and/or tall cacti in and adjacent to the right-of-way will be minimized to the extent practicable to satisfy conductor-clearance requirements (NESC and 10 years of timber growth). Trees and other vegetation will be removed selectively to blend the edge of the right-of-way into adjacent vegetation patterns, as practicable and appropriate.

### **2.3. Wild Horses and Burros**

Since 1971, the BLM has been managing free-roaming horses and burros on public land in accordance with the Wild Free-Roaming Horse and Burro Act. This Act mandates that wild and free-roaming horses and burros be protected from unauthorized capture, branding, harassment, or death, and furthermore that these animals be considered as an integral part of the natural systems based on their distribution.

Although the project does not cross any designated Herd Management Areas, the Harquahala and Little Harquahala Herd Management Areas south and east of Aguila and Salome, Arizona are in close proximity to the project alignment, and so the potential exists for interaction with wild horses and burros. Key concerns regarding potential effects to wild horses are related primarily to the potential for harassment or disturbance based on construction activities associated with the project, and activities during construction that could result in degradation of habitat, or limiting the free-roaming nature of herds (fencing, etc.). In addition to the mitigation measures identified in other portions of the POD that address minimizing new disturbance (Appendix A3 – Transportation Management Plan), and right-of-way, rehabilitation, and restoration practices (per BLM requirements), several key mitigation measures have been identified to address potential concerns with wild horses that include the following:

- Prior to construction, all supervisory construction personnel will be instructed on the protection of wild horses and the policies regarding encounters with wild horses.
- Watering facilities (tanks, natural springs and/or developed springs, water lines, wells, etc.) will be repaired or replaced if they are damaged or destroyed by the construction contractor to their predisturbed condition as required by the BLM Authorized Officer.
- Fences and gates will be repaired or replaced to their predisturbed condition as required by the BLM Authorized Officer if they are damaged or destroyed by construction activities. New temporary and/or permanent gates that could limit free-roaming herd activities will be installed only with the permission of the BLM.

- Appropriate signage, designating the potential presence of wild horses, will be posted along major construction access roads, at intervals determined with the BLM Authorized Officer.

#### **2.4. Noise and Interference**

Some increased level of noise will result from the construction and maintenance of the transmission line. During construction, noise will be generated from equipment used for grading (e.g., access roads, staging areas, and towers sites), tower erection activities, helicopters, vehicle movement along the corridor, and blasting. In addition, noise will be generated during the rehabilitation phase of the project due to vehicle use and revegetation activities, road reclamation, and landform contouring along the right-of-way. These noise levels will be temporary in nature and primarily isolated to areas of construction. Some low levels of residual audible noise may result from the conductors, a phenomenon referred to as corona-generated noise.

Potential noise issues may prove disruptive, or a nuisance to wildlife. Mitigation measures designed to restrict the timing of construction in key areas are presented in Section 6 to address these concerns. In addition, noise generated concerns related to blasting (where needed) are discussed in Appendix A5 – Blasting Plan Methodology. While primarily rural in location, other potential mitigation measures to be implemented on behalf of local residents in the immediate vicinity of the project will include the following:

- The Proponent will continue to monitor industry studies performed to determine the effects of audible noise in order to ascertain whether these effects are significant.
- The Proponent will respond to complaints of line-generated radio or television interference by investigating the complaints and implementing appropriate mitigation measures. The transmission line will be patrolled on a regular basis so that damaged insulators or other line materials that could cause interference are repaired or replaced.

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**APPENDIX E: STORMWATER POLLUTION  
PREVENTION PLAN METHODOLOGY**

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## 1. INTRODUCTION

The Environmental Protection Agency currently allows discharges of stormwater associated with construction activities for projects, such as the Palo Verde Hub to Sun Valley Substation 500kV Transmission Project, if the activity is compliant with the National Pollutant Discharge Elimination System (NPDES) General Permit.

In accordance with this regulation, the Arizona Department of Environmental Quality (ADEQ) has issued a General Construction Stormwater Permit for the State of Arizona (AZG2008-001). Operator(s) of construction sites that involve one or more acres of disturbance must submit a Notice of Intent (NOI) to obtain coverage under the General Permit, which requires that a Stormwater Pollution Prevention Plan (SWPPP) be prepared for the projects in accordance with the AZPDES. The construction contractor will be responsible for submitting an NOI, preparing a SWPPP, and implementing the SWPPP throughout the duration of construction.

### 1.1. Purpose

The purpose of a SWPPP for the project is to identify and implement stormwater pollution prevention measures to reduce the quantity of impacted runoff and to deal with runoff in a manner that minimizes environmental impacts during construction, operation, and maintenance of the project.

A SWPPP is needed to minimize the volume of contaminated runoff, including sediment runoff, and to implement mitigation measures in a manner that minimizes environmental impacts. Temporary stabilization methods (e.g., silt-fences, straw bales, etc.) are not guaranteed or fail-safe measures without regular maintenance and field inspection throughout the winter and runoff season. In addition to conventional methods of erosion control, there are numerous new and improved products that the construction contractor is encouraged to review in the development and implementation of a SWPPP.

The proper implementation of mitigation measures associated with a SWPPP is imperative during all construction activities. These activities will be conducted in an environmentally-sensitive and responsible manner in order that no discharge of sediment or contaminants may be conveyed as either direct or indirect discharge to wetlands, Waters of the United States, or Waters of the State of Arizona.

Development, implementation, and maintenance of the SWPPP will provide the contractor with the framework for reducing soil erosion and minimizing pollutants in stormwater during construction. The SWPPP will:

- Define the characteristics of the site and the type of construction that will be occurring
- Describe the practices that will be implemented to control erosion and the release of pollutants in stormwater
- Create an implementation schedule to ensure that the practices described in the SWPPP are in fact implemented and to evaluate the plan's effectiveness in reducing erosion, sediment, and pollutant levels in stormwater discharge from the site



- Describe the final stabilization/termination design to minimize erosion and prevent stormwater impacts once construction is complete

## **2. NOTIFICATION REQUIREMENTS AND IMPLEMENTATION**

Before construction begins, the construction contractor will be responsible for developing a SWPPP and obtaining coverage under the NPDES General Permit by filing an NOI and submitting the appropriate fee with the ADEQ in accordance with NOI instructions. The construction contractor will be responsible for implementing a site-specific SWPPP, and is required to perform routine inspections over the duration of construction activities.

The primary intent of the erosion and sediment control measures (often referred to as BMP) is to control and minimize erosion at the source. For the project, the main source of potential stormwater contamination will be erosion of soils from the construction activities. It will be the responsibility of the construction contractor to implement erosion control measures where necessary, in order to minimize pollutants in stormwater and to keep the project in compliance with ADEQ regulations.

A copy of the SWPPP shall remain with the construction manager on the construction site or at a staging area(s), and be readily available while the transmission line and substations are under construction, from the start of construction activities until completion of restoration for the project.

The construction contractor must retain a set of construction site maps for the duration of the project, and for 3 years after the Notice of Termination, that delineate the following items:

- areas of soil disturbance that have been stabilized
- areas to be graded, along with a time schedule
- areas of potential soil erosion where control practices will be implemented
- the type of control practices and time schedule for implementation
- locations of any postconstruction projects
- copies of all inspections performed over the duration of the project

## **3. PROJECT MODIFICATIONS**

The construction contractor is responsible for maintaining an up-to-date SWPPP and shall amend the SWPPP whenever there is a change in construction or operations that may affect the discharge of pollutants to surface waters or groundwater. The SWPPP shall also be amended if it is in violation of the General Permit or has not achieved the general objective of eliminating pollutants in stormwater discharges. The SWPPP shall be amended and implemented in a timely manner, but in no case more than 14 days after it has been determined that the SWPPP is inadequate. All amendments should be dated and directly attached to the SWPPP. ADEQ may require the discharger to amend the SWPPP.

#### **4. MITIGATION, MAINTENANCE, INSPECTION, REPAIR, AND MONITORING**

The construction contractor shall at all times properly operate and maintain any facilities and systems of treatment and control (and related appurtenances). Proper operation and maintenance also include appropriate quality assurance procedures. Proper operation and maintenance may require the operation of backup or auxiliary facilities or similar systems if construction takes place in an above average precipitation year.

##### **4.1. Specific Mitigation Measures and Methods**

Mitigation and protection measures to ensure construction activities comply with state and EPA requirements for stormwater management to be incorporated into the SWPPP include the following:

- One or more responsible persons will be designated to manage stormwater issues, conduct the required stormwater inspections, and maintain the appropriate records to document compliance with the terms of the NPDES permit.
- The SWPPP will identify areas with critical erosion conditions that may require special construction activities or additional industry standards to minimize soil erosion.
- Migration of construction-related sediment to all adjacent surface waterbodies will be prevented.
- Stormwater industry standards will be maintained on all disturbed lands during construction activities, as described in the SWPPP.
- Approved sediment and erosion control industry standards will be installed and maintained until disturbed areas meet final stabilization criteria.
- Temporary industry standards will be used to control erosion and sediment at staging areas (equipment storage yards, fly yards, laydown areas) and substations.
- The construction schedule may be modified to minimize construction activities in rainsoaked or muddy conditions. Existing roads and trails will be used for travel to the maximum extent feasible unless otherwise authorized. During wet road conditions, any ruts deeper than 5 inches remaining on the roads from the project will be repaired at the Authorized Officer's discretion.
- Upon completion of construction, permanent erosion and sediment industry standards will be installed along the transmission line within the right-of-way, at substations, and at related facilities in accordance with the SWPPP.
- In areas of drought susceptible soils, the soil surfaces will be mulched and stabilized to minimize wind erosion and to conserve soil moisture.

##### **4.2. Maintenance, Inspection, and Repair**

The construction contractor will be required to conduct routine maintenance and emergency repair on any structural controls, including the maintenance of erosion and sediment control measures and any required subsequent reporting. As part of the SWPPP, the construction

contractor will be required to develop an inspection schedule and conduct routine inspections to identify conditions that could lead to discharges of chemicals or contact of stormwater with storm drainages or surface waters. Schedules will be established for regular inspections of equipment and areas. Inspections of the construction site shall occur within 24 hours following any rainfall event of 0.5 inch or greater to identify areas contributing to a stormwater discharge and to evaluate whether BMPs are in place and functioning properly. For storm events with extended durations, observations shall be performed every 24 hours. During inspections, the construction contractor will also determine if the BMPs identified in the SWPPP are adequate and whether additional control practices are needed. All monitoring and inspection records that have been produced in association with this SWPPP will be retained for a period of at least 3 years.

#### **4.3. Monitoring**

To monitor the effectiveness of mitigation, and to evaluate whether additional mitigation measures are required, a monitoring program and reporting system will be followed. As part of erosion control of the site, weather monitoring will be conducted to prepare for precipitation events. It is recommended that weather forecasts be checked at least every week.

### **5. TRAINING**

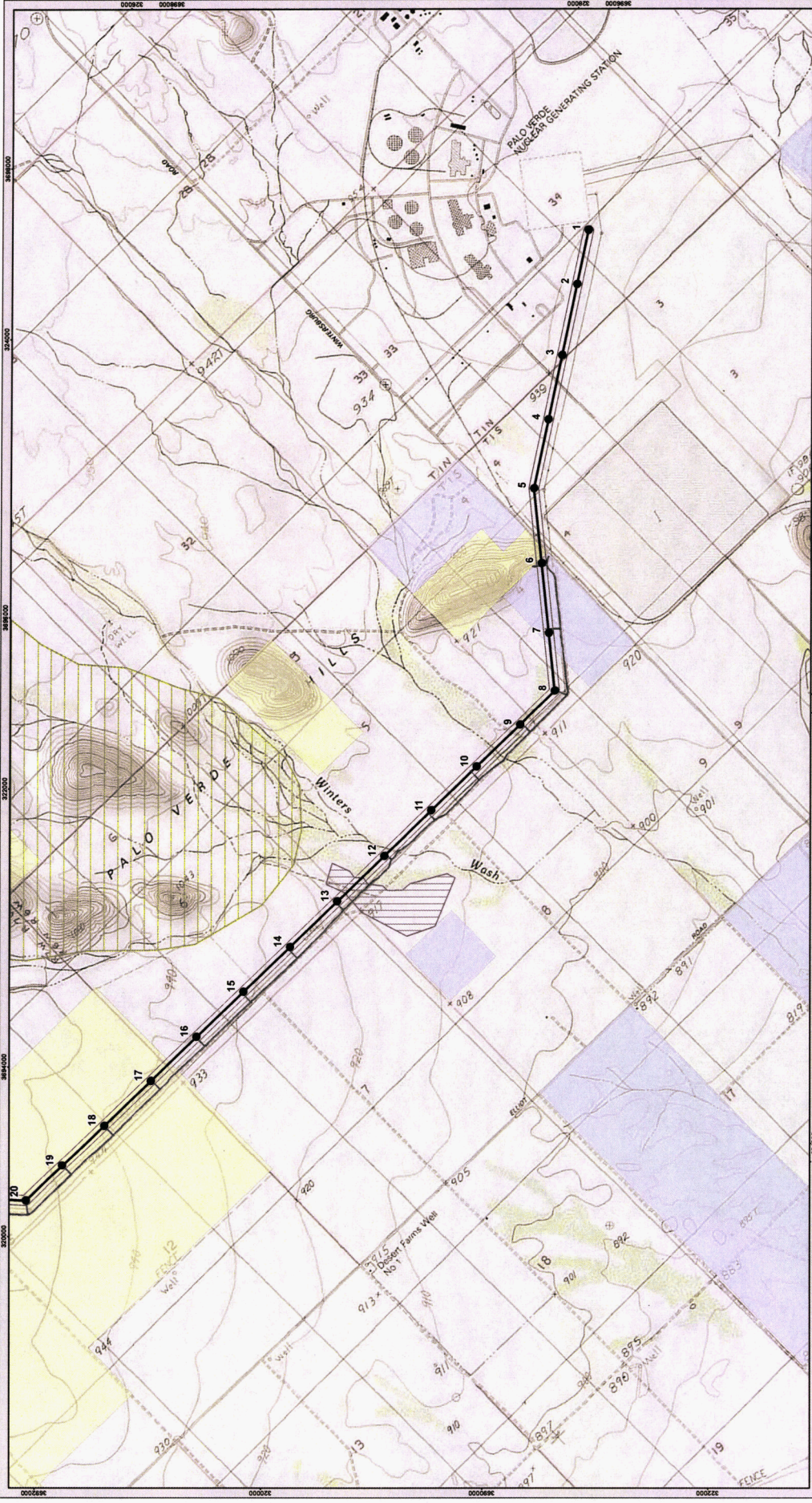
The construction contractor will be responsible for the SWPPP implementation, amendments, and revisions. On-site construction personnel will be responsible for installation and maintenance of on-site mitigation measures.

The construction contractor will be responsible for familiarizing their personnel with the information contained within the SWPPP. Training meetings will need to be held for new personnel who join the project after initial training has been provided. The purpose of these meetings will be to review the proper installation methods and maintenance of all erosion control measures to be used for the project. The monitoring/inspection program and all required maintenance and repair will be conducted by trained personnel.

### **6. POSTCONSTRUCTION STORMWATER MANAGEMENT**

Mitigation measures used to reduce pollutants in stormwater discharges after all construction phases have been completed at the site will take into account local postconstruction stormwater management requirements, policies, and guidelines, as well as site-specific and seasonal conditions. Postconstruction mitigation measures will be assessed during future line maintenance. During line maintenance, any areas disturbed by the line installation that are observed to be eroding sediment into drainages will be assessed for the appropriate permanent mitigation measure to control sediment movement off the disturbed area. Disturbed areas will also be restored per BLM requirements.





**PALO VERDE TO SUN VALLEY (TS-5) 500kV  
TRANSMISSION LINE PROJECT**

**Construction Map 1**

**August 2013**

aps

1:24,000

0 1,000 2,000 Feet

**LEGEND**

**Project Features**

- Structure Location
- Project Centerline
- Project Right-of-Way

**Avoidance**

- Environmental Sensitive Site
- CAT2 Tortoise Habitat
- CAT3 Tortoise Habitat

**Ownership**

- Bureau of Land Management
- State Land

Source: BLM 2013, AOS 2013, EPG 2013, ERS 2013

Panel Location





**PALO VERDE TO SUN VALLEY (TS-5) 500kV  
TRANSMISSION LINE PROJECT**

**Construction Map 2**

**aps**

**epi**

1:24,000

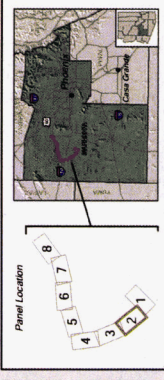
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August 2013

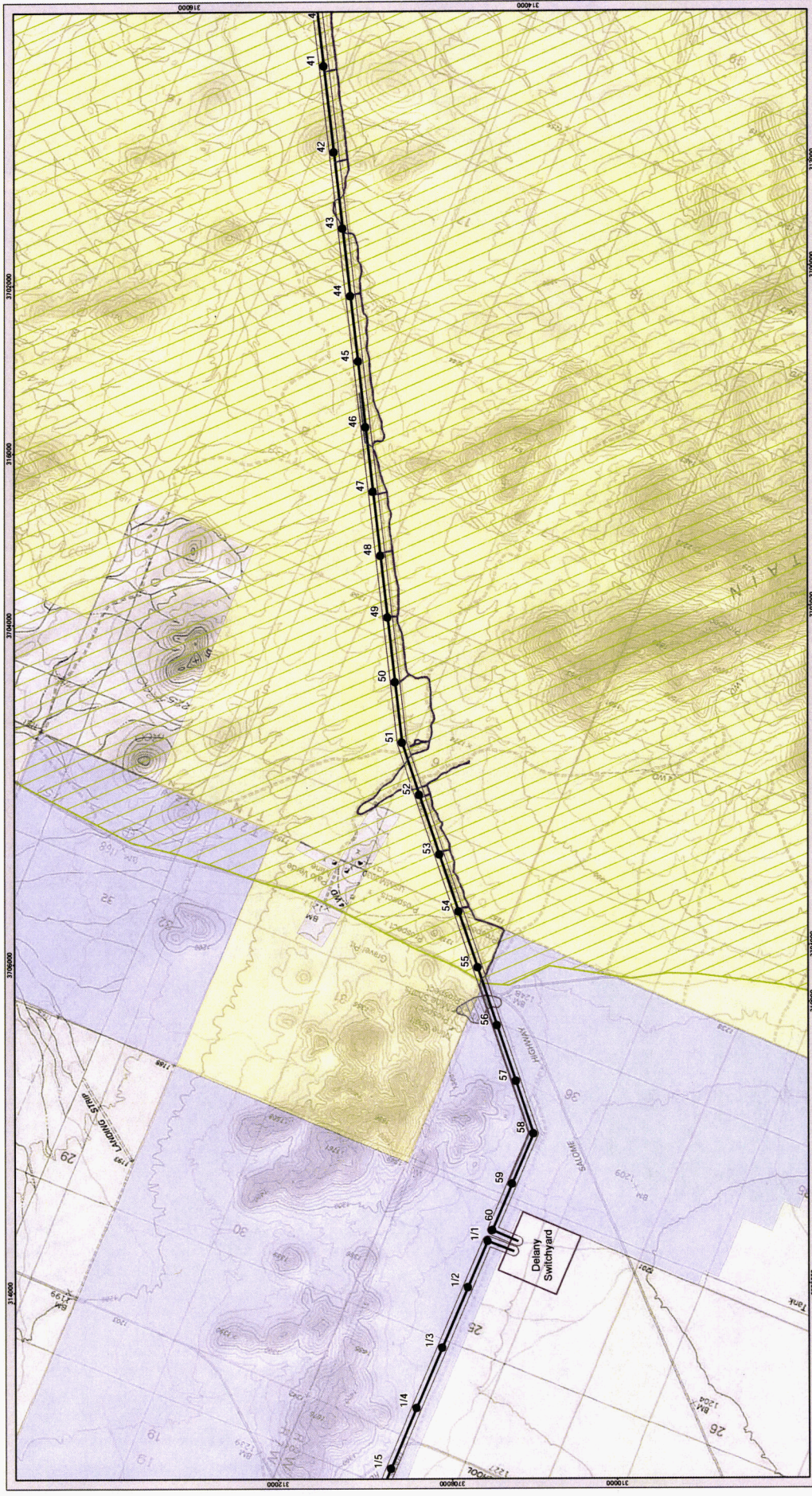
**LEGEND**

<b>Project Features</b>	<b>Avoidance</b>	<b>Ownership</b>
Access Road	Environmental Sensitive Site	Bureau of Land Management
Structure Location	CAT2 Tortoise Habitat	State Land
Project Centerline	CAT3 Tortoise Habitat	
Project Right-of-Way		

Source: BLM 2013, APS 2013, EPAG 2013, ERSI 2013







**LEGEND**

	Project Features		Ownership
	Access Road		Bureau of Land Management
	Structure Location		State Land
	Project Centerline		
	Project Right-of-Way		

**Avoidance**

	Environmental Sensitive Site
	CAT2 Tortoise Habitat
	CAT3 Tortoise Habitat

Source: BLM 2013, APS 2013, EPG 2013, ERS 2013

Panel Location

1:24,000

August 2013

**PALO VERDE TO SUN VALLEY (TS-S) 500kV TRANSMISSION LINE PROJECT**

**Construction Map 3**





**LEGEND**

	Project Features		Avoidance		Ownership
	Access Road		Environmental Sensitive Site		Bureau of Land Management
	Structure Location		CAT2 Tortoise Habitat		State Land
	Project Centerline		CAT3 Tortoise Habitat		
	Project Right-of-Way				

**Construction Map 4**

**PALO VERDE TO SUN VALLEY (TS-5) 500KV TRANSMISSION LINE PROJECT**

**August 2013**

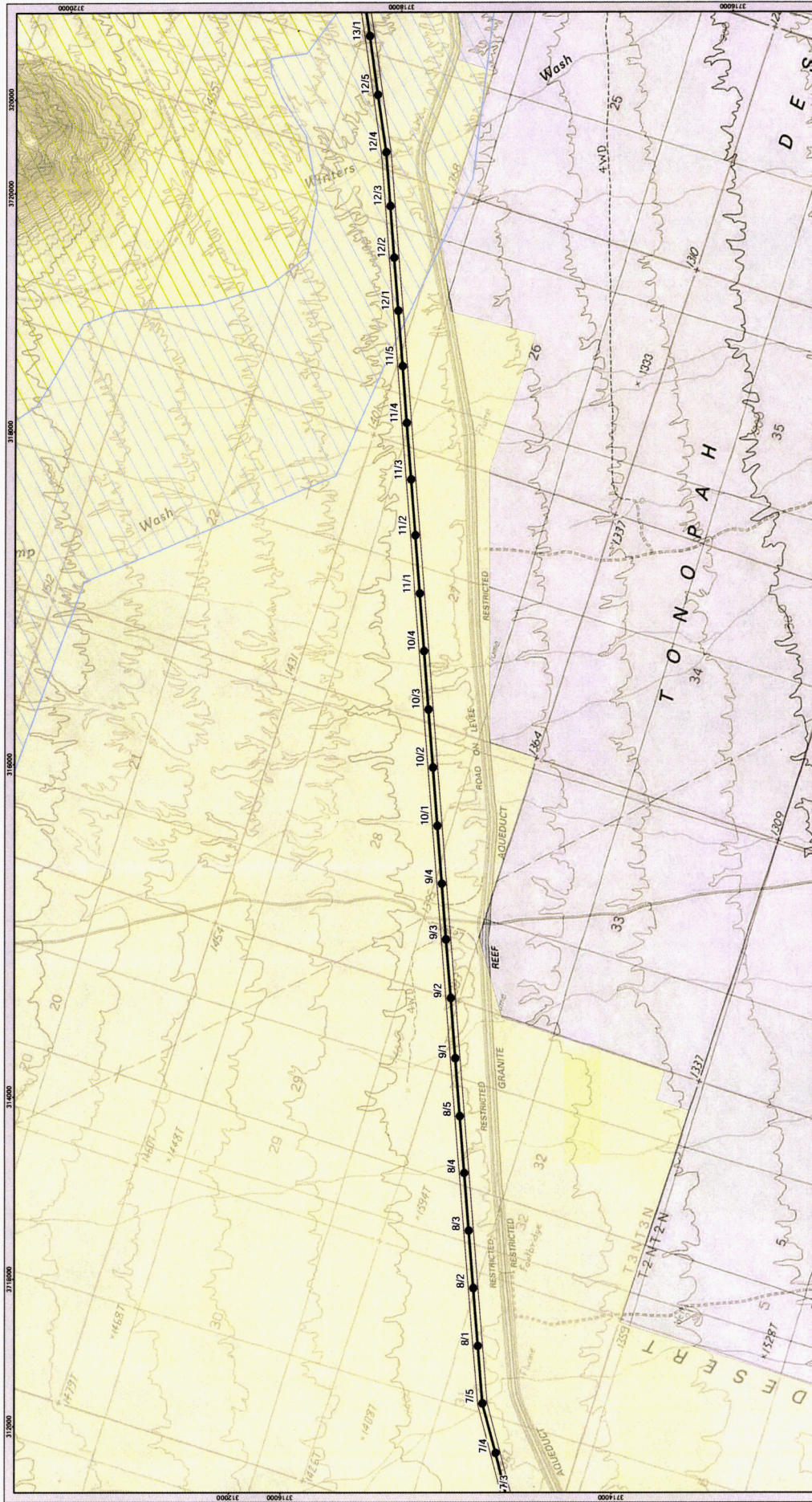
Scale: 1" = 1,000 Feet

Source: BLM 2013, APS 2013, EPG 2013, ERSI 2013

**Panel Location**







**LEGEND**

**Project Features**

- Access Road
- Structure Location
- Project Centreline
- Project Right-of-Way

**Avoidance**

- Environmental Sensitive Site
- CAT2 Tortoise Habitat
- CAT3 Tortoise Habitat

**Ownership**

- Bureau of Land Management
- State Land

**Scale**

0 1,000 2,000 Feet

1:24,000

August 2013

**aps**

**enr**

**PALO VERDE TO SUN VALLEY (TS-5) 500kV TRANSMISSION LINE PROJECT**

**Construction Map 5**

**Panel Location**

**Source:** BLM 2013, APS 2013, EPG 2013, ERSI 2013





**LEGEND**

<b>Project Features</b>	<b>Avoidance</b>	<b>Ownership</b>
Access Road	Environmental Sensitive Site	Bureau of Land Management
Structure Location	CAT2 Tortoise Habitat	State Land
Project Centerline	CAT3 Tortoise Habitat	
Project Right-of-Way		

**PALO VERDE TO SUN VALLEY (TS-5) 500kV TRANSMISSION LINE PROJECT**

**Construction Map 6**

August 2013

Scale: 1" = 1,000 Feet

Scale: 1" = 2,000 Feet

aps

**Panel Location**

**Source:** BLM 2013, APS 2013, EPD 2013, ERSI 2013





**LEGEND**

**Project Features**

- Access Road
- Structure Location
- Project Centerline
- Project Right-of-Way

**Avoidance**

- Environmental Sensitive Site
- CAT2 Toroise Habitat
- CAT3 Toroise Habitat

**Ownership**

- Bureau of Land Management
- State Land

**Scale**

0 1,000 2,000 Feet

1:24,000

August 2013

**aps**

**enr**

**Panel Location**

**Source:** BLM 2013, APS 2013, EPD 2013, ERSI 2013

**PALO VERDE TO SUN VALLEY (TS-S) 500kV TRANSMISSION LINE PROJECT**

**Construction Map 7**





**PALO VERDE TO SUN VALLEY (TS-5) 500KV TRANSMISSION LINE PROJECT**

**Construction Map 8**

August 2013

aps

0 1,000 2,000 Feet

1:24,000

Legend

Panel Location

1 2 3 4 5 6 7 8

**LEGEND**

**Project Features**

- Structure Location
- Project Centerline
- Project Right-of-Way

**Avoidance**

- Environmental Sensitive Site
- CAT2 Tortoise Habitat
- CAT3 Tortoise Habitat

**Ownership**

- Bureau of Land Management
- State Land

Source: BLM 2013, APS 2013, EPG 2013, ERSI 2013

